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An Ethnographic Study of Socio-Emotional Factors In Interpersonal Peer Relationships and Their Impact on the Academic Success of African American High School Students in Mathematics

Alanna Johnson

ACCEPTANCE

This dissertation, AN ETHNOGRAPHIC STUDY OF SOCIO-EMOTIONAL FACTORS IN INTERPERSONAL PEER RELATIONSHIPS AND THEIR IMPACT ON THE ACADEMIC SUCCESS OF AFRICAN AMERICAN HIGH SCHOOL STUDENTS IN MATHEMATICS, by ALANNA JACKSON JOHNSON, was prepared under the direction of the candidate's Dissertation Advisory Committee. It is accepted by the committee members in partial fulfillment of the requirements for the degree, Doctor of Philosophy, in the College of Education, Georgia State University.

The Dissertation Advisory Committee and the student's Department Chairperson, as representatives of the faculty, certify that this dissertation has met all standards of excellence and scholarship as determined by the faculty. The Dean of the College of Education concurs.

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AN ETHNOGRAPHIC STUDY OF SOCIO-EMOTIONAL FACTORS IN INTERPERSONAL PEER RELATIONSHIPS AND THEIR IMPACT ON THE ACADEMIC SUCCESS OF AFRICAN AMERICAN HIGH SCHOOL STUDENTS IN MATHEMATICS

by

ALANNA J. JOHNSON

Under the Direction of Dr. Iman Chahine

ABSTRACT

Nationally, the outlook for African Americans in K-12 education is dismal. While gains are being made, African Americans still lag behind their White peers. The latest reports by the National Center for Education Statistics (2009) show a 31 point gap between 8th grade African Americans and Whites in mathematics. While statistics such as these are in abundance, there are few accounts of stories of success (Berry, 2005; Jett, 2009; Stinson, 2004). Studies directly related to the role of socio-emotional interpersonal relationships and the means by which African American high school students negotiated that space in terms of successful math performance were significantly limited.

The purpose of this study was to explore the nature of socio-emotional factors in peer relationships between school friends and discover the ways in which students negotiated academic success through these relationships. The following research questions guided the study: How do academically successful African American high school students negotiate academic success in mathematics classrooms using peer relationships? What are the socio-emotional factors contributing to the academic success of these students in mathematics? How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics? Using the lens of Critical Race Theory (CRT), this ethnographic study explored how African-American high school students constructed and appropriated socio-emotional relationships to support their academic success. Through the use of purposive sampling, four African-American high school students were observed in an AP Calculus AB course and interviewed over a seven month period at a high school in a southeastern state. The data collected were crystallized using researcher memos and the collection of artifacts. Data was analyzed using five coding techniques: structural, in vivo, subcoding, eclectic, and axial. The study found seven themes related to socio-emotional factors and perceptions about how the characters negotiated academic success in mathematics classes using peer relationships: 1) selective narrowing of social interaction, 2) interpersonal relationships affect academic identity and behaviors, 3) interpersonal engagement, 4) pursuit of emotionally gratifying interactions, 5) satisfaction of emotional needs through social networks, 6) effect of collaborative learning, and 7) illusion of control.

INDEX WORDS: Mathematics, Ethnography, Socio-emotional factors, Critical race theory, African American, High school students, Academic success, Storytelling

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DEDICATION

This dissertation is dedicated to and in memory of my daughter, Lauren Elisabeth, my grandmother, Evergreen Swanigan McBurrows, and my cousin, Brenda Foster Scott – three very special angels who I am grateful passed my way.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1 INTRODUCTION

I was born and raised in a small rural town in South Georgia in a two-parent household. I am the youngest of three girls. My mother is a retired middle school mathematics teacher and my father retired from two careers – the first being the military and the second a large manufacturing company. We were what one would call middle class, and most of our neighbors were teachers. In fact, my fifth grade teacher lived four houses up from us.

As expressed by several students in Walker's (2006) study, my parents believe in education and stressed that average performance was not good enough. I remember being in the sixth grade and making a C on the midterm report in geometry. My mother grounded me for six weeks with the lecture that I should just be able to show up to class and get a C. My mere presence would guarantee that. She expected that I would actually put forth the effort to raise my grade from average. While my parents expected much of me, so did my teachers. Research (Farmer, Lines & Hamm, 2011) shows the tremendous influence teachers have over a child's academic performance. In fifth grade my teacher and neighbor suggested that I be tested to enter the gifted program for sixth grade. Thus began my childhood experience as a gifted mathematics student. I had already been bullied by my peers in elementary school for being very articulate – or what some term as "acting white" (Fordham & Ogbu, 1986) - and having a rather reserved behavior; now I had to contend with the reputation of being academically exceptional. Thankfully, I had a good core group of friends by then who shielded me from most of the abuse that I might have encountered. As Crosnoe, Cavanagh, and Elder (2003) assert, my friends – in part – served protective roles in my journey toward academic success. They accepted me for who I was. Those people, my inaugural support system, are still my friends today.

I embraced my intelligence and thrived in my environment. I had one other close friend who was in most of my advanced classes (all except the gifted mathematics classes). He was my study partner and helped to push me to the places my parents demanded I go. I was alone in mathematics, however. I was the only black student in most of the mathematics classes that I took from sixth grade to graduation from high school. Although I felt isolated, I did my best because by that time I took pride in my work and my grades. I worked hard not only for my parents, but also for myself, as I did not want anything less for me.

My desire as an African American female teacher of mathematics is to make the subject accessible to more students of color by demystifying the subject. In doing so, I understand there must be a will on the part of the student to achieve. Reflecting upon my upbringing and educational experiences, I developed interest in the drive of students who are academically successful in mathematics. There are many obstacles for students of color that act to dissuade those who persevere. Through this body of research, I endeavor to discover what role, if any, socio-emotional relationships play in the development of academically successful, African American high school students.

Problem Statement and Research Questions

The purpose of this study is to explore the nature of the socio-emotional factors in the relationships between school friends and to examine manners in which students negotiate academic success in mathematics through these relationships. Socio-emotional relationships are a derivation of Socio-emotional Factor Selective Theory developed by Laura Carstensen, a Stanford psychologist. While Carstensen's (1992, 1993, 1995, 1998) primary research focus is based on a life span theory of motivation, it is also associated with academic achievement of adolescents (Ahmad, 2012). This study will explore socio-emotional relationships between

classroom friends who have helped to encourage and nurture academic achievement through peer interactions which has led me to the following research question:

> How do academically successful African American high school students negotiate academic success in mathematics classes using peer relationships?

More specifically, the study will focus on the following sub-questions:

a. What are the socio-emotional factors in peer relationships contributing to the academic success of these students in mathematics?
b. How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

African American high school students who have achieved academic success in mathematics are the focus of this study. The goal is to explore those socio-emotional factors that contribute to the academic achievement and engagement in classroom work for African American students, particularly their interactions with their peers and friends while in school.

Rationale

My interest in this topic spawns from my subjective experiences as a student in high school. While my parents were considerably involved in my schooling, I found that I also had a group of friends who encouraged me to do well academically. This group was a mixture of average and above average students whom I met at different levels of matriculation from primary to secondary education, all of whom I am still friends with today. Flashman (2012) argues that "[f]riends play an important role in the educational process" (p. 61). Albeit, in her research and contrary to my experience, Flashman contends that high achieving students are more likely to have friendships with other high achieving students and vice versa. In my case, I had friends who were not high achieving students but who were still instrumental in my academic success. My purpose is to determine if my experience is being replicated. I think my circumstance was

subconscious, meaning as I reflect, I am more aware now of the formation of the positive peer group, which was what sustained me during those times. Perhaps, this may be the case for others who are academically successful in mathematics.

Because most of my friends were not in the higher level classes I attended, there were few opportunities to form study groups, but rather there was a camaraderie that buffeted the stigma that often comes with being gifted academically and being African American. There were times when I was ridiculed and accused of "acting white" as a result of my academic abilities. In fact, it is often suggested in the literature that "Black children hide their academic abilities by becoming class clowns, dropping out, and suppressing effort to avoid being perceived as 'acting White'" (Bonner, 2000, p. 651). However, within my group of friends, there was an acceptance that negated the negativity and allowed me to flourish. This group along with the support of my parents is what I attribute to my relative academic success. Likewise the majority of my friends have gone on to lead successful lives with rewarding careers. Our socio-economic statuses varied as did the level of parental involvement in our schooling with the constant being our friendships.

Theoretical Framework

The study will employ CRT as the major theoretical framework that will guide the exploration of the nature of the socio-emotional factors in peer relationships between school friends and manners in which students negotiate academic success through these relationships. CRT begins with the idea that racism is so embedded within American society that it appears normal (Schram, 2006). Throughout the literature (Brayboy, 2005; Guitiérrez, 2010; Parker & Stovall, 2004; Solórzano, 1998; Yosso, 2005), CRT has been identified as being comprised of the following five tenets:

1) CRT lies at the intersection of race and racism. CRT theorists refuse the notion that forms of subordination are solely based on gender and class discrimination.
2) CRT challenges dominant ideology. CRT challenges traditional ideas in education such as meritocracy, color blindness, and equal opportunity.
3) CRT is committed to social justice. CRT commits fully to eliminating racism.
4) Storytelling is central to CRT. Storytelling is recognized as a legitimate and appropriate method that lends to understanding, analyzing and teaching about racial discrimination. This precept is critical to the field of education.
5) CRT is from a shared interdisciplinary perspective. It is imperative to analyze race and racism from historical and contemporary perspectives using an interdisciplinary approach.

In general, the literature is in disagreement about a single set of tenets associated with CRT, but it is common in the literature that we see these five tenets. Since this study will focus on African American high school students' peer relationships and their recounting of successful experiences with mathematics, the most salient precept of CRT that will guide the research methodology is storytelling.

Storytelling. Storytelling allows marginalized people to give "voice" to experiences from a minority viewpoint (Ladson-Billings, 1998). Another phrase associated with giving voice to one's experiences is what Ladson-Billings (1998) terms as "naming your reality" (p. 15). Delgado (1989a) offers three reasons for naming one's own reality:

1. Reality is a social construct;
2. Stories allow marginalized members of society a medium for self-preservation; and
3. The exchange of stories from teller to listener provides mainstream groups a view of other cultures from a perspective other than their own.

Marginalized people have always told stories and counter-stories (Tyson, 2003); therefore, Delgado (1989a) contends subordinated groups are instinctively aware of the significance of storytelling. As asserted by Gutiérrez (2010), "CRT seeks to privilege the voices of scholars of color and the experiences of students and teachers and to work against popular discourses that suggest such experiences are subjective, illegitimate, or biased" (p. 10). Stories produce bonds - shared understandings – among minorities. Because degrading social images of

out-groups are often internalized by members of the group, storytelling is therapy by which oppressed people gain healing and as a result group solidarity is promoted. Hearing the stories of others who have been marginalized is empowering and encouraging for those who feel a sense of isolation in their experience (Delgado, 1989a). Marginalized people, thus, draw strength within the group as counter-reality, of sorts, is created (Delgado, 1989a; Tyson, 2003). Through several semi-structured interviews over the course of the study, participants will give voice to what role, if any, friendships have played in their academic success in mathematics, to what struggles they may have encountered along the way and how these friendships may have served them in overcoming obstacles faced in mathematics classrooms.

Terms and Definitions

In academic research, it is common for terms to have multiple meanings subject to the field of study. For this proposed study, the following three terms will be used with respect to this particular body of work.

Academic Success. Embedded within the research question of the proposed study is an appeal for, what has been termed as, successful African American high school students as participants. For the purpose of this study, participants who have achieved academic success in mathematics will be identified by teachers in the mathematics department who are familiar with the magnet student population. These students must also be enrolled in upper level mathematics courses such as Honors and/or Advanced Placement (AP) Calculus.

Friendship. In this study, I employ Gottman and Parker's (1987) depiction of friendships. Gottman and Parker (1987) declare that friendships among children serve six functions: "companionship, stimulation, physical support, ego support, social comparison, and intimacy/affection." Friends share private thoughts, common interests, information, and

treasured secrets. In matters of companionship, students may choose to take the same classes to provide stimulation to one another in an effort to successfully get through the course; specifically mathematics courses which can be intimidating. Ego support, social comparison and intimacy and affection go hand in hand in relation to academic support. Friendships supply an "expectation of support, encouragement, and feedback that helps children maintain" healthy social and emotional images of themselves (Santrock, 1995, p. 315). Intimacy and affection between friends may bolster these experiences as students feel comfortable sharing vulnerabilities in academics, and free to ask questions or request clarification of classroom concepts.

Socio-emotional factors. This study will adopt the definition of socio-emotional as proffered by Santrock (1995). Santrock (1995, 2009, 2010a, 2010b) has authored several texts on life span development which encompasses socio-emotional development of children and adults of all ages and stages of life. An adaptation of Santrock's (1995) definition of social-emotional will be operationalized for this body of research and is as follows: socio-emotional is a process that consists of variations of an adolescent's personality, relationships and emotions with others over one's life span. Of particular interest is the relationship between high school students and their friends as it relates to their interactions regarding academic success in mathematics. Any socio-emotional factors related to the academic success of the participants in mathematics will be analyzed and evaluated as they emerge in the field.

Significance of the Study

This study has theoretical and practical significance. Theoretically, this study is significant as CRT shifts the focus of the discourse of deficit and achievement gap as it relates to African American students to one that acknowledges and draws upon the many contributions of

African Americans socially, educationally, and culturally (Yosso, 2005). CRT scholars argue that culture embodies the lived experiences and behaviors that are the result of the unequal distribution of power along such lines as race, gender, class, ethnicity, age, and sexual orientation (Cohen, Manion, & Morrison, 2011; Leistyna & Woodrum, 1996). Participants of this study will have a unique opportunity to add a growing body of literature by sharing their lived experiences of success in mathematics classrooms. Practically, teachers will be able to take these accounts and utilize them to give insight on how to structure their classrooms in such a way that advances student success by capitalizing on natural friendships. Teachers play a vital role in the socioemotional development of the students they teach. The opportunity is there to assist in nurturing friendships that result in academic achievement in mathematics through classroom activities that involve increased peer interactions.

2 LITERATURE REVIEW

The discourse on African Americans and education appears very disparaging of African Americans with little hope for improvement or success in academic achievement, particularly as it relates to the so-called achievement gap between African Americans and whites. There are scholars, however, who have worked to document gains made in education for African Americans and emphasize programs around the country that are positively affecting the achievement gap. This literature review explores: 1) the history of CRT and its role in education, 2) the role that socio-emotional interpersonal relationships play in affecting the performance of high school students, and 3) the impact of peers on students' success in mathematics. For the purpose of this response, socio-emotional interpersonal relationships are defined as friendships. Throughout the literature, terminology used to identify socio-emotional interpersonal

relationships alternates from "peer groups" to "friends." In review of the literature, studies directly related to the role of socio-emotional interpersonal relationships and the means by which African American high school students negotiated that space in terms of successful math performance were significantly limited. However, provided here is an overview of current and past research on the history of peer relationships and academic success for minorities in mathematics.

The review will employ analyses and critiques of several studies as they relate to the area of research which is how African American high school students use peer relationships to negotiate success within the mathematics classroom. There are few studies which include all aspects of the research as it relates to African Americans, academic success, friendships and CRT. However, the study attempts to encompass an assortment of the various aspects as they relate to the following research question and sub-questions:

How do academically successful African American high school students negotiate academic success in mathematics classes using peer relationships?

a. What are the socio-emotional factors in peer relationships contributing to the academic success of these students in mathematics?
b. How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

History of CRT

Most Americans became aware of CRT when President Clinton nominated Lani Guinier, a University of Pennsylvania law professor, for Assistant Attorney General for Civil Rights (Ladson-Billings, 1998). Guinier (1991) suggested in her legal writings that the only opportunity for underrepresented racial groups (minorities) to receive an equitable share of social benefits

and fair political representation might be for their votes to be weighted more heavily than the majority vote. An uproar ensued as Guinier was condemned as attempting to undermine the American tradition of "one person, one vote" (Ladson-Billings, 1998, p. 11). Subsequently, CRT and its principles took center stage (Ladson-Billings, 1998).

CRT began as a protest of the lack of diversity at Harvard Law School. The complaint focused on the dearth of diverse faculty members and held in contempt the curriculum deemed to disregard issues of race and racial inequality (Carbado, 2002; Tyson, 2003). Disturbed by the slow rate of racial reform following the civil rights movement, Derrick Bell and Alan Freeman were eventually joined by other scholars in the creation of the CRT movement. CRT is a product of Critical Legal Studies (CLS); a legal movement concentrated its efforts to challenge traditional legal scholarship. Critics of CLS argue that the theory analyzes the legitimacy of oppressive structures within American society but fails to give voice to the lived experiences of oppressed people of color. Another criticism of CLS is the movement lacks focus on issues of race and racism (Ladson-Billings, 1999; Yosso, 2005). Ladson-Billings (1998) writes, "CLS scholars critiqued mainstream legal ideology for its portrayal of U.S. society as a meritocracy but failed to include racism in its critique" (p. 12).

The contention is based on several areas of departure between CLS and CRT. CLS criticizes formal bureaucratic structures but is informal in its approach to resolving the issues desiring to rely on processes such as goodwill. As a result, the following elements of the CLS movement are identified as threats to people of color:

1) The rejection of incremental reform by some members of CLS,

2) The idealism of CRT,

3) The CLS concept of false consciousness (Delgado, 1990; Tate, 1997).

The rejection of incremental reform assumes an unfair society will use selective reform to mask perpetual oppression. An idealistic CRT relies on reason and ideology to resolve society's ills. The concept of false consciousness is a hegemonic ideal whereby the oppressed are unconscious participants of their oppression (Delgado, 1987; Tate, 1997). These perceived threats are representative of the critical divergence between CLS and CRT. Subsequently, as the momentum of the civil rights movement began to slow, it became increasingly apparent that there were "limitations of achieving justice using dominant conceptions of race, racism, and social equality" (Tate, 1997, p. 206). Thus scholars, Derrick Bell and Alan Freeman among other legal scholars, expressed concern that social transformation would be limited under the auspices of CLS.

Criticisms of CRT. In contrast, McLaren (1998; as cited in Parker & Stovall, 2004) insist a key criticism of CRT to be as follows:

> It reinforces a racialized politics of identity and representation that ignores the imperatives of capitalist accumulation in a globalized economy and class divisions within racialized communities. The post-Marxist critics of CRT in particular have forcefully argued that it fails to provide a systemic analysis of global capitalism and its effect on communities (p. 168).

Post-Marxist theorists argue CRT emphasizes identity politics based on race while ignoring the propensity of capitalism to paint the human experience with one broad brush rather than through a lens of diversity (Darder & Torress, 2002; Parker & Stovall, 2004).

Additionally, not all scholars agree that narratives are valid vehicles in research. "…[A] legal scholar should be a researcher (not a storyteller) whose scholarship rests on an objective, universal, non-contingent set of rules and criteria – narratives, it is thought, lack scientific basis and thus have no place in law or scholarship" (Zamudio, Russell, Rios, & Bridgeman, 2001/2011, p. 162). Others such as Darder and Torres (2004) view class, not race, as the

fundamental issue in pursuing social justice. Scholars who critique CRT view its focus on race as a tool to analyze racism and injustice as dismissive of other categories that might provide a different analysis. Further, Darder and Torres (2004) assert that CRT romanticizes the experiences of out-groups; has a tendency to group white people and marginalized people as homogenous; and exaggerates. As a result of these critiques, Darder and Torres (2004) argue that an unintended consequence may be essentialism.

Brooks' (2009) critique of CRT centers on its concentration of outside social forces such as social and institutional structures and master narratives as the roots of racial inequality. He submits that CRT fails to dissect ways in which marginalized groups contribute to their own subordination. Moreover, Brooks argues that CRT neglects to offer a viable framework for solutions to the social problems it highlights.

Another criticism of CRT research is the need for further research along with an exploration of policy implications. "Yet, it is often too easy to merely acknowledge limitations in the scope of one's work and assume that someone else will pick up where that work has left off" (Carbado, 2002, p. 193). There is a call for scholars to no longer rely on "someone else" to carry the research toward policy implementation, but to personally take on the task (Carbado, 2002).

Furthermore, Solórzano (1998) admonishes CRT scholars to begin to focus on the intersection where race and gender meet. The experiences of women of color differ from those of men of color. "It is the space where being a woman of color is quantitatively and qualitatively different than being a man of color or a white woman or man" (Solórzano, 1998, p. 132). Hence, it is possible to construct a framework to reassess how one perceives and counters critics of affirmative action through a CRT lens.

CRT and its Role in Education. As CRT began to take hold, its applications were increasingly employed in realms outside of law, such as education. CRT seeks to legitimize the experiences of people of color, particularly in education where the standard of excellence is based on the successes of the majority population. It insists the public discourse surrounding law, society, and culture be held to a higher level of scrutiny and criticism as it relates to people of color. CRT creates a space for reinterpretation of the text as it is written which holds people of color and their experiences as subordinate (Tate, 1997).

Zamudio et al. (2001/2011) posit CRT provides an alternative theoretical lens and pedagogical orientation that addresses issues of schooling students of color confront. With CRT, educators gain analytical concepts to better grasp inequality in education. Educators understand through CRT the property of whiteness and how value placed on race provides Whites with resources that enrich their educational opportunities yet limit the education of students of color. The CRT precept of interest convergence explains how educational reforms designed to address inequality have been limited and put into place only when it also benefits Whites. The CRT tenet of intersectionality addresses the intricacies of racism as it intersects with forms of oppression that are class and gender based (Zamudio, et.al, 2001/2011).

The connection of CRT between education and legal scholarship is drawn in an analysis of laws designed to shape education. In the landmark case of Brown vs. the Board of Education in 1954, desegregation was the mandate. The theme of this historic decision was equal opportunity. Equal opportunity constituted access to the same instruction, curricula, materials, funding, and school structures for people of color as there was for Whites (Ladson-Billings, 1998). "If we look at the way that public education is currently configures, it is possible to see

the way that CRT can be a powerful explanatory tool for the sustained inequity that people of color experience" (Ladson-Billings, 1998, p. 21).

CRT offers the following tools for analysis in the field of education:

1) Race is socially constructed (Delgado, 1989b; Ladson-Billings, 1998);
2) Within American democracy and institutions, racism has remained central – not oppositional – to their functionality; and
3) Race and racism are both productions of law and social and educational policy (Carbado, 2002).

In areas of instruction, CRT submits current instructional strategies presume Black students to be deficient. Consequently, countless strategies are engineered and re-engineered "to deal with (read: control) 'at-risk' (read: African American) students" (Ladson-Billings, 1998, p. 22). The use of various assessment tools are seen by critical race theorists as a move to "legitimize African American students' deficiency under the guise of scientific rationalism" (Ladson-Billings, 1998, p. 23). Ladson-Billings (1998) contends the condition of Blacks in America appears appropriate when supported by "scientific" data and statistics on which justification for subordination of Blacks is built.

Colorblind Ideology. Parker and Stovall (2004) contend that CRT proposes the centrality of race in the making of our world" (p. 170). In particular, culture and identity have been shaped in such a way that has created subordinate groups. Ironically, current discourse in American society advocates for a color blind ideology in politics, social and economic affairs, and education (Lipsitz, 1998; Parker & Stovall, 2004). The result being teachers and administrators compelled to ignore race and racism as they relate to issues such as low student achievement among minorities (Lewis, 2001; Lipman, 1997; Madsen & Mabokela, 2000; Parker

& Stovall, 2004). CRT situates color-blind ideology as a pretext to maintain white domination while leaving "political majorities intact, which in turn uses the power of racism to undermine minority interest[s]" (Parker & Stovall, 2004, p. 173; see also Bell, 1992; Crenshaw, Gotanda, Peller, & Thomas, 1995; Delgado, 1989a; Williams, 1991). Subsequently in opposition to the ideology of color-blindness, CRT uses stories and counter-stories with triangulation of historical facts to impact present-day discrimination.

Creating Policy. Parker and Stovall (2004) propose critical positions that bolster CRT in education:

1) The experiences of racial groups merit intellectual pursuit because of the uniqueness of the cultural, historical and contemporary experiences of people of color;
2) The historical and contemporary experiences of people of color can prove instructive about human interactions; and
3) One of the most significant tasks of a teacher or scholar who plans to utilize CRT is to develop tools that help generate knowledge designed to describe, analyze and empower people of color and to help change negative social forces into positive social forces as they impact on everyday life. (p. 174).

Parker and Stovall maintain that CRT serves its purpose in education by generating informed perspectives that challenge racist policies and practices. The scholars write, "The connection between critical race theory and education would entail liking teaching and research to general practical knowledge about institutional forces that have a disparate impact on racial minority communities" (Parker & Stovall, 2004, p. 174).

Mathematics Education, Policy, and the Achievement Gap. Martin (2009) analyzes research, policy and practice in mathematics education and how race, racism and racialized inequities have and have not been addressed in which he asserts racial hierarchies position African Americans, Latinos and Native Americans below Whites and Asians. These structural systems of hierarchy work to maintain White privilege in mathematics education as well as the larger society. Martin (2009) argues that sociological and critical theory frameworks as they

relate to race, racism and racialized inequality rely on "inadequate and impoverished approaches" (p. 297). While educational policies have a tendency to misrepresent or oversimplify educational research, practice can be improved to encompass astute research and creative policy implementation. Subsequently, mathematics education would benefit from frameworks often used outside its realm (Bonilla-Silva, 1997, 2001; Essed, 2002; Lewis, 2003a, 2003b, 2004; Martin, 2009; Omi & Winant, 1994).

Sociologists have long argued race as a social construct; however, "mathematics education research has typically failed to acknowledge the socially constructed and sociopolitical character of race" (Martin, 2009, p. 298). As a result, Martin (2009) makes three appeals. The first of which calls for more research illuminating students' everyday experiences (Berry, 2003, 2005; Jett, 2009; Martin, 2000, 2006a, 2006b; Stinson, 2004; Thompson & Lewis, 2005) of racism in mathematics as well as how institutional and structural forces work to perpetuate these racial experiences (Oakes, 1985, 1990; Oakes, Joseph, & Muir, 2001).

Secondly, Martin (2009) aims to modify how policy makers theorize the goals and objectives of mathematics education for marginalized groups in ways that frame the mathematical abilities of these groups in a discourse of deficiency. Goals that seek only to close the so-called achievement gap suggest African Americans, Latinos and Native Americans are inferior to Whites and Asians. Further, there is an inference within these goals members of these minority groups must reject their culture in favor of assimilation to become successful in mathematics. Such implications only serve to devalue African Americans, Latinos and Native Americans within schools and society at large. Lastly, teachers are encouraged to acknowledge mathematics classrooms as "highly racialized spaces" while rebuffing any notion of a color-blind

approach to their teaching philosophies (Brewley-Kennedy, 2005; Martin, 2009; Reed & Oppong, 2005).

The notion society now is color-blind is detrimental to minorities. Advances in mathematics for members of these groups are impaired in two ways: (1) the approach to resolving the achievement gap becomes overly broad and assimilation based, and (2) the issue of tackling the gap appears daunting and thus is relegated as being beyond repair whereby educators then turn their focus solely to matters of teaching and learning mathematics. Martin (2009) posits the meaning of race as a social construct is significant for mathematics education in the following ways:

1) [T]hey are important to consider when mathematics education is situated in its larger sociopolitical context, a context characterized by long-standing inequitable patterns of access to mathematical opportunities on the one hand, and the simultaneous rhetoric of *Mathematics for All* on the other;
2) [They] are important in considering the aims and goals of mathematics education research and policy; and
3) [They] are important in the everyday contexts in which individual students must struggle for mathematics literacy and negotiate both their racial identities and their identities as doers of mathematics (pp. 314-315).

Likely critiques of Martin's (2009) research would be his lack of consideration for the intersectionality of race, class, and gender – a major tenet of CRT. Yet his contention is that issues of race within mathematics education must be further developed and understood, particularly amongst educators and policy makers if other connections are to be made. Greene (1996) offers that teachers can resist this by moving young children into their own interpretations of their lives and their lived worlds, opening wider perspectives to them, respecting the language of the student, and encouraging multiple readings of written texts and reading of the world. The achievement gap continues to be used as the prevalent theory to explain difference in the academic achievement between African Americans and other ethnicities. High achieving

African American students often encounter dilemmas in school settings. To gain acceptance of other non-African American students in their higher level courses, African American students must often learn to negotiate this space to "fit in" by downplaying their culture while at school. These students must also maintain their African American culture at home (Bonner, 2000). Consequently, very little research is available regarding how students negotiate this space.

Shifting the Focus

Challenges to the dominant discourse of deficiency as it relates to marginalized groups in mathematics are emerging (Berry, 2005; Jett, 2009; Stinson, 2004). Stinson (2004), Jett (2009), and Berry (2005) each use CRT to frame their research. In an effort to broaden research associated with African Americans and their academic experiences, particularly as they relate to male students and mathematics, Stinson (2006) offers historical and current theories from anthropological, social psychological and sociological perspectives. Stinson (2006) argues for a move away from a discourse of deficit as it relates to African Americans and schooling in favor of developing a discourse of achievement aimed at cultivating sound pedagogy that positively affects the achievement gap for African Americans. Jett (2009) agrees with Stinson (2006) as he adds "to the knowledge base concerning the successful schooling experiences of African American men" (p. 93) through his exploration of how African American men gain access to college mathematics and achieve success in that environment.

Likewise, Berry (2005) focuses on agency and self-empowerment in his research of successful African American mathematics students. Berry (2005) examines middle school African American males who are successful in mathematics, their experiences, and perceptions. Berry's (2005) research is framed using CRT as CRT seeks to legitimate narratives while providing a forum in which marginalized groups can be heard. Still, "very few studies in

mathematics education have privileged the voices, and counter-stories, of African American, Latino, and Native Americans in this way" (Martin, 2009, p. 327). Conchas (2006) makes an argument for educational research needs to move away from school failures and instead focus on student successes. He asserts that "the intention is to unravel how urban school practices can empower youth" (p.3).

Schools and Student Engagement. Schools have an impact on the level of engagement of urban minority students. Three areas of concern are racial segregation in school, divisions within the racial groups, and the variance of institutional support the students receive. Conchas (2006) found that "school within a school" career academies fostered a positive learning environment for minority students by eliminating those areas of concern. However, this phenomenon does not exist without challenges. Attitudes and beliefs about race are perpetuated through school practices that maintain racial hierarchies. "In essence, school practices reinforce existing attitudes and beliefs about the nature and significance of race through the maintenance of racial hierarchies" (Noguera, 2003 as cited in Conchas, 2006, p. 45; see also Conchas, 2001; Conchas & Goyette, 2001). This is exhibited by the disproportionate amount of low income African Americans and Mexicans in remedial classes and interviews with the teachers revealed that the guidance counselors overlooked African American and Latino students when considering advanced placement (AP) courses and some academies (Conchas, 2006; Klopfenstein, 2004). According to African American faculty members, "the counselors were the gatekeepers of the tracking system" (Conchas, 2006, p.8). Placement in AP courses and the Graphics Academy was based on race; subsequently, exacerbating the achievement gap Students also revealed teachers had higher expectations for the Asian and White females and spent more time working with them. Many low achieving students reported the lack of positive role models

or "institutional agents" which led to a lack of motivation and no aspirations to attend college or pursue long term career goals (Conchas, 2006; Klopfenstein, 2004).

Research indicates that gifted programs have proven to be beneficial for White and Asian students, yet little information is contained within the research as it pertains to minority students. Lee, Olszewski and Peternel (2010) report gifted programs or acceleration "leads to a number of positive academic and affective outcomes for gifted students" (p. 191). Thus far, this perception substantiates a majority point of view. To expand the breadth of knowledge concerning minority students and perceived benefits of acceleration, Lee et al. (2010) conducted a qualitative investigation of academically successful, minority students, along with their teachers, and their perceptions about an accelerated mathematics program. An examination of responses to questions related to their perceptions of advanced mathematics and accelerated placement, Lee et al. (2009; 2010) found minority students to be excited about advanced mathematics finding it beneficial and challenging. The participants' self-images were reinforced by like-minded, academically successful friends who expressed belief in their intelligence.

Peer Emulation and Social Influence. Studies (Crosnoe et al., 2003; Flashman, 2012; Oyserman, Brickman, Bybee, & Celious, 2006; Walker, 2006) show a correlation between adolescent friends and academic performance however, researchers are unclear of the manner by which friends modify academic outcomes (Jones, Audley-Piotrowski, & Kiefer, 2012). Furthermore, social cognitive and peer emulation theory suggest that academic self-concept is directly affected by friendship interactions (Bandura, 1986; Baron & Kenny, 1986; Berndt, 1999; Jones, et al., 2012). Social cognitive and peer emulation theory do not, however, map a link to between friendships and academic performance (Jones et al., 2012).

The study of Jones et al. (2012) focuses on "the proximal role of dyadic and peer group friendship interactions in order to further examine how perceptions of friends might affect self-beliefs and behaviors" (p. 20). Jones et al. employ two theories to frame their research concerning whether friendships change academic behaviors and self-belief: social-cognitive theory (Bandura, 1986) and peer emulation theory (Berndt, 1999; Berndt & Keefe, 1996). Social-cognitive theory asserts that students gain information about friends' behaviors, both academic and social, through "vicarious experiences and direct instruction" (Bandura, 1986 as cited in Jones et al., 2012, p. 20). The student may change his or her approach to academics after having observed the behavior of friends.

Peer emulation theory suggests students may be socially influenced by their friends' behaviors and will, thus, adopt and replicate their actions (Berndt, 1999; Berndt & Keefe, 1996; Jones et al., 2012). Three processes of social influence are identified: compliance, identification, and internalization (Jones et al., 2012; Kelman, 1961). Compliance ensues when an effort is made by the student to gain favorable standing with another student by adopting that student's behaviors. Identification happens when the students assumes the beliefs of another in an effort to appease that person. Internalization occurs when the student aligns his or her beliefs on a particular topic to those of another to gain favor (Jones et al., 2012).

The majority of prior research involving peer emulation theory has focused on negative behaviors. Little is known of how peer emulation theory might be employed in relation to academic behaviors. Research shows that friendships contribute heavily to students' school engagement and the degree of students' adjustment to the school environment (Ladd, Herald-Brown, & Kochel, 2009; Jones et al., 2012). From childhood to adolescence, social networks evolve and expand. As children, many of the friendships formed are with neighbors and are not

necessarily formal relationships (Santrock, 1995). High school students develop a broader array of friendships that center on shared interests such as sports, extra-curricular activities, and academics. As adolescents mature, they spend more time with their friends than any other social or familial group; thereby naturally adopting some habits of the collective.

This pressure to assimilate can be positive or negative (Camarena, 1991; Foster-Clark & Blythe, 1991; Pearl, Bryan, & Herzog, 1990; Santrock, 1995; Wall, 1993). While much of what is known of peer pressure is associated with negative acts, a great deal of what Santrock (1995, p, 384) terms as "peer conformity" is positive and exhibits a teen's need to "fit in" by taking the same classes, participating in the same activities, or joining the same clubs at school. Behaviors such as studying together, attending class, discussing grades, and plans for education beyond high school are other activities in which friends may engage. Jones et al. (2012) examine the impact of how these behaviors are perceived by friends and if there is an impact on student academic outcomes.

Friendship as a Resource and Social Capital. Many studies on friendship and its importance relevant to human growth and emotional stability exist. However, the tone of the research is largely dependent upon the stage of life being studied. Research on friendships among adolescents has traditionally focused on the negative influences these relationships bear (Crosnoe et al., 2003). Alternately, Crosnoe et al. (2003) situate adolescent friendship as a potential resource (Antonucci & Akiyama, 1995; Crosnoe, 2000; Oliker, 1989). Crosnoe et al. (2003) claims the behavior of adolescents and their friends is founded on two ideas: influence and selection. The idea of influence suggests that students who perform well academically promote this behavior among their peers through "modeling, support, reinforcement, and coercion" (Crosnoe, 2000 as cited Crosnoe et al., 2003, p. 333). With selection, academically

successful students gravitate to other students who perform likewise. Whereas both behaviors occur, research has shown that selection emerges more frequently as the explanation for academically supportive friendships (Aseltine R., 1995; Crosnoe et al., 2003; Matsueda & Anderson, 1998). Still, Crosnoe et al. (2003) employ both pathways in exploration of their central research question stated above.

Friends who engage one another academically may be sources of social capital, Crosnoe et al. (2003) contend. Social capital is a commodity that allows access to resources gained through relationship ties (i.e., friendships) (Crosnoe et al., 2003; Furstenberg et al., 1999; Sampson, Morenoff, & Earls, 1999). Crosnoe et al. argue the following:

> By entering into a friendship with an academically oriented peer, an adolescent is gaining access to a new pool of social psychological and instrumental resources: social support and modeling of pro-social behavior, emotional support for the meeting of challenges, friends' knowledge and skills related to schooling and academic subjects, exposure to larger academically oriented social networks, and access to various forms of capital the friend may have at home (p. 333).

These resources can encourage academic achievement and advance the importance of education for students who engage in these relationships (Crosnoe et al., 2003; Portes, 1998; Stanton-Salazar & Dornbusch, 1995; Steinberg, Brown, & Dornbusch, 1996).

Although their attitudes about school are no different, African American students tend to perform at a lower level academically in comparison to their white counterparts. Crosnoe et al. (2003) hypothesize that, for African Americans, academically situated friendships are more protective for this group than for Whites. Whereas African American adolescents are not wanting for what Crosnoe et al. term "the social psychological aspects of social capital" (p. 334), the authors suggest there may be a lack of "instrumental social capital" (p. 334). For example, Whites are more knowledgeable about the school system, more affluent, and more at ease with interacting with school administrators making them better equipped at advocating for their

children. Therefore, because of the resources that can be gained from having friends as social capital, social capital may be more important for African American adolescents than for Whites (Crosnoe et al., 2003; Newman, Lohman, Newman, Myers, & Smith, 2000; Steinberg & Morris, 2000). Although Crosnoe et al. report the salience of friends as academic resources for African Americans, their empirical, quantitative study shows the likelihood of the availability of academically oriented friendships for this group to be minimal when compared to Whites. The results indicated that "if academically oriented friends were an academic resource, then African American youths had less of this resource…"(Crosnoe et al., 2003, p. 342).

These resources extend to college students as well. Kraft (1991) explores coping mechanisms of successful Black students on a predominately White college campus. The study shows the majority of the students identified two factors as essential to their success: discipline and some form of social support. The participants stressed the importance of study groups and emotional encouragement. "Knowing who to talk to or where to go for academic help was considered by all of the students as important to their success. Just as important was knowing that someone cared and was willing to help, even if the student did not feel an immediate need for help" (Kraft, 1991, p. 433).

The Role of Gender and Academic Achievement. Research shows friendship to be both positively and negatively influential in the lives of adolescents (Crosnoe et al., 2003; Farmer et al., 2011; Schweinle & Mims, 2009). Girls are more likely to take a subsequent advanced course such as Calculus, Physics or an honors or AP course (Riegle-Crumb, Farkas, & Muller, 2006). Moreover, there is a positive correlation between students having female friends who were academically successful and subsequent advanced course taking. However, the results are more compelling for same sex friendships among girls than they were for boys in

mathematics and science. Because math and science have historically been male dominated, it is believed girls respond more favorably academically with others of the same sex and are more prone to take another advanced course if a same gender friend were also taking the course. The explanation for this is having another academically successful girl in the course would serve as a source of strength and encouragement in an environment where girls are underrepresented, thereby tempering the possible anxiety associated with competing against males. "This situation creates a structural opportunity for an academic and social network to flourish, such that girls can encourage, compel, and learn from their friends, who are also studying, struggling, and succeeding in these subjects" (Riegle-Crumb et al., 2006, p. 220).

Latino adolescents also benefit academically from peer relationships or friendships (Riegle & Callahan, 2009; Flores-Gonzalez, 2005; Ream, 2005; Benner, 2011). Latino girls were shown to benefit more academically from maintaining friendships with Latino peers who were third generation or beyond when compared to friendships with Whites. In contrast, Latino boys fair better academically when connected to all co-ethnic peers. Riegle and Callahan (2009) concluded that their results "counter notions of a pervasive negative peer influence of minority youth and suggest that co-ethnic ties are an important source of social capital for Latino students' achievement" (p. 611).

Oyserman et al. (2006) argue that in-group membership based on physical markers of minority boys, also known as cliques (Santrock, 1995), who reside in low-income, high-risk communities will promote a sense of belonging and subsequently, facilitate positive school engagement. Oyserman et al. (2006) support this argument by researching physical markers of cliques and the roles they play as both protective factors and as risk factors (McLellan, Haynie, & Strouse, 1993; Santrock, 1995). In this qualitative study, the authors observe the enactment of

masculinity in a group of minority boys of low socioeconomic status (SES). The context for the argument is the mounting research espousing the beneficial links between academic success and racial-ethnic identity. The authors' hypothesis is situated in critical theory and the idea of a society that is class-based.

In Oyserman et al.'s (2006) study dark-skin toned African American boys and physically identifiable Latino boys were shown to have a higher level of school engagement and greater academic success with school. Boys possessing these physical markers were determined to feel more socially accepted than their counterparts of the same race. It is implied that the need to feel accepted is strong for minority boys. The claim is that satisfying this desire will free the young men to focus on academics and eliminate the propensity to seek acceptance through destructive behaviors detracting from potential academic success. Participants of studies such as this (Oyserman et al., 2006) construct their own reality through racial-ethnic in-groups identification to create a sense of belonging and connection allowing them to freely pursue success academically with the support of their group. It is an example of positive racial-ethnic groups promoting academic achievement through the removal of what some may consider normal teenage angst associated with fitting in or belonging.

Peer Group Management

While gender may play a role in the relationship between friends' perceptions and academic performance (Rose & Rudolph, 2006) less is understood of whether there is a difference in how males and females perceive their friends' academic or social behaviors (Jones, et al., 2012). Nonetheless, Jones et al. (2012) report a positive relation between mathematics performance and the perceptions of students concerning their friends' academic and social

behaviors and their academic self-concepts. Likewise, students' mathematics self-concepts were positively related to perceptions of friends' academic behavior.

It is increasingly evident the influence peers have on the behavior and psychological development of children. Farmer et al. (2011) caution leaving peer relationships to chance. Rather, Farmer et al. suggest children and adolescents receive guidance in the formation of peer groups that will likely result in constructive achievement. Teachers, in particular, interact with students in ways that direct social interaction, with or without intentionality. Termed by Farmer et al., the "invisible hand" (p. 248), the authors believe teachers are capable of fostering supporting environments in which students may thrive academically.

Teachers play significant roles in the social development of children and adolescents. Dynamic teachers create exercises that enhance student social and behavioral skill sets and needs (Baker, Clark, Maier, & Viger, 2008; Farmer et al., 2011; Johnson, Johnson, Buckman, & Richards, 1985; Wentzel, Battle, Russell, & Looney, 2010; Wilson, Pianta, & Stuhlman, 2007). Yet while peer group management is not a primary focus of academic instruction, there is support for the idea that there is a correlation between students' social interactions in the classroom and their academic achievement. The power the peer group yields may be used to encourage student engagement (Crosnoe et al., 2003; Farmer et al., 2011; Jones, et al., 2011). Studies (Chung-Hall & Chen, 2010; Werner & Hill, 2010) show that members of peer groups "become more like the descriptive norms of their peer groups…over the course of a school year" (Farmer et al., 2011, p. 251). In other words, students who are associated with academically successful peer groups will become more academically successful or, at the very least, become more concerned with being academically successful as the school year progresses.

Acting White and Academic Achievement

There are detractors of the idea that friends may be used as resources for academic achievement for minority students. The phenomenon of 'acting White' is prevalent in schools across the nation. Fryer (2006) identifies 'acting White' (Fordham & Ogbu, 1986) as "a set of social interactions in which minority adolescents who get good grades in school enjoy less social popularity than White students who do well academically" (p. 53). The definition of 'acting White' varies from one situation to another. Not every adolescent would describe it the same. When polled, students participating in a focus group classified actions such as speaking standard English and taking honors or Advanced Placement courses as behaviors that signified 'acting White' (Fryer, 2006). While it is difficult to determine the transgressor, Fryer insists schools and their structures lend to such occurrences. Studies show the phenomenon is more prevalent in racially integrated public schools versus private institutions or predominately African American public schools (Fryer, 2006).

Then Senator Barack Obama would bring 'acting White' and the purported achievement gap to the national forefront in his speech at the Democratic National Convention when he suggested 'acting White' was associated with reading a book or getting good grades (Fryer, 2006). Though some of the aforementioned behaviors correlate to academic engagement, it is negative peer pressure that has "emerged as a common explanation for the black-white achievement gap, a gap that cannot be explained away by differences in demographic characteristics alone" (Fryer, 2006, p. 54).

Fryer's (2006; Fryer & Torelli, 2010) results show African American students with GPAs as high as 3.5 have more friends than students with lower GPAs. However, as GPAs increase among African American students, friends become fewer. The findings show African American

males are more adversely affected than females. As GPAs increase, males lose friends at a higher rate than females (Fryer, 2006; Fryer & Torelli, 2010). In terms of cross-ethnic friendships, even the most academically gifted will have an average of one friend of another ethnicity (Fryer, 2006; Fryer & Torelli, 2010). Moreover, extra-curricular activities were shown to offer little support toward friendship for high achieving African American students. The National Honor Society emerged as the sole activity where ethnic differences were erased (Fryer, 2006; Fryer & Torelli, 2010).

As mentioned previously, Fryer (2006; Fryer & Torelli, 2010) notes predominately African American public schools offer a space where African American students are least likely to be subjugated to the phenomenon of 'acting White.' Fryer (2006; Fryer & Torelli, 2010) finds no evidence student popularity is adversely affected by getting good grades at majority African American public schools. Fryer (2006) finds that "acting White is unique to those schools where black students comprise less than 80 percent of the student population" (p. 57).

Suggesting a reassessment of the 'burden of acting white' (Fordham & Ogbu, 1986), Horvat and Lewis (2003) offer an ethnographic study of student peer groups, racial identity, and academic achievement. It was discovered that within Black peer groups there were multiple friendships co-existing. Some applied negative peer pressure while others supported academic excellence. Students within the peer groups negotiated academic success strategically by "camouflaging behaviors, all the while demonstrating that it is possible to construct a healthy racial identity in which academic achievement and aspirations neither compete nor conflict, but complement, culturally constructed notions of what it means to be black" (Horvat & Lewis, 2003, p. 275). Horvat and Lewis posit that Fordham and Ogbu's (1986) theory of 'acting white' does not support the existence of groups of academically successful students who support one

another and encourage academic engagement. Moreover, Flores-Gonzalez (2005) argues academically successful Latino students are not affected by 'the burden of acting white.' Flores-Gonzalez "presents data showing that academic achievement is related to peer-group membership and that schools are largely responsible for which peer group students join" (p. 625). Citing the findings of an ethnographic study carried out at a predominately Latino high school, school administrators ensured academic success by academically, socially, and spatially separating high achievers from low achievers.

Self-Efficacy and Academic Achievement. Schweinle and Mims (2009) examine the mathematics self-efficacy of African American elementary students in comparison to their White counterparts. According to Zimmerman (2000, p. 83 as cited in Schweinle & Mims, 2009), self-efficacy is the "personal judgment of one's capabilities to organize and execute course of action to attain designated goals" (p. 502). Self-efficacy determines the challenges people seek (Bandura, 1997, 2000, 2006; Schweinle & Mims, 2009), asserting that people attempt only those tasks at which they are capable and feel will be successful (Bandura & Cervone, 2000; Schunk, 1981; Schunk & Hanson, 1985; Schunk et al., 1987; Schweinle & Mims, 2009). Hence, self-efficacy is associated with academic achievement (Pajares, 1996; Schunk, 1995a, 1995b; Schweinle & Mims, 2009). Research also shows the impact of self-efficacy on mathematics performance (Pajares & Kranzler, 1995; Schweinle & Mims, 2009).

Studies suggest students are influenced by stereotype threat both positively and negatively. If a portion of group members are academically successful, other members of the group are more likely to be academically successful. Conversely, negative behaviors of group members have the same effects (Schunk & Pajares, 2002; Schweinle & Mims, 2009). Thus, research shows if children are associated with a peer group that is viewed upon negatively by

others, then academic self-efficacy may be harmed (Oyserman, Harrison, & Bybee, 2001; Schweinle & Mims, 2009). Fear of judgment adversely affects school performance and academic achievement, consequently perpetuating the stereotype (Aronson & Steele, 2005; Schweinle & Mims, 2009; Steele & Aronson, 1995).

Results showed no difference in self-efficacy among the African Americans students in comparison to the White students. Schweinle and Mims (2009) posit the outcome lends to an explanation of resilience. Identity with an ethnic group may be a source of this resilience (Graham, 1994; Schweinle & Mims, 2009). People are inclined to group themselves according to like cultural values and demographic characteristics, according to Schweinle and Mims (2009; Rummens, 2003). Because African-American participants in this study showed no less self-efficacy than White participants, there may be an indication of a sense of belonging to their ethnic group that positively correlates to self-esteem and academic achievement; thus, suggesting a high level of resiliency (Schweinle & Mims, 2009).

The Protective Role of Friendship. Despite the national reports of severe and persistent inequalities for African American children in education, there are successful programs across the nation along with students who are achieving at above average levels. Crosnoe et al. (2003) cite friends as resources for students in their quest for academic achievement. Crosnoe et al. assert the protective role of friendships does not differ by race, but by disadvantage. However, minorities are disproportionately disadvantaged and therefore are more prone to benefit from friendships as resources for academic achievement. Protective roles function as barriers to negative influences. Friends, like parents and community members, also provide counter-narratives of encouragement and worthiness. Like Crosnoe et al., Flashman (2012) explains "[f]riends play an important role in the educational process" (p. 61). In her research, Flashman

contends high achieving students are more likely to have friendships with other high achieving students and vice versa. Further, changes in grades – for better or worse – can be linked to a change in friends.

Though very little research exists that emphasizes academically successful African American students as compared to literature that focuses on deficit models, studies are emerging that call attention to school achievement for this group (Berry, 2008; Noble, 2011; Stinson, 2006; Walker, 2006). Noble (2011) contributes to the research with a study concerning self-efficacy and African Americans males who excel in mathematics on the collegiate level. Through the lens of social cognitive theory, four sources of self-efficacy are outlined: enactive attainments, vicarious experience, verbal persuasion, and physiological state (Jones et al., 2012, Noble, 2011). Enactive attainments are the effects prior experiences have on future performance. Stellar academic performance may breed other great experiences; the reverse is as likely to occur. Vicarious experience, as noted by Jones et al. (2012), is a belief in one's abilities after having witnessed others successfully engaged in the same activity (Noble, 2011). Verbal persuasion is encouragement offered from trusted sources such as family, friends, and teachers. Lastly, an example of a person's physiological state is anxiety students feel over subjects like mathematics. It may also be compared to emotions that arise when faced with stereotype threat (Fryer, 2006; Fryer & Torelli, 2010) that tend to hinder academic success.

Noble (2011, pp. 193-194) approaches the study qualitatively using culturally appropriate research methods, as stated below:

1) Culturally congruent research methods – qualitative, but can be quantitative, research that includes interviews and participant observations as a means to gain a holistic representation of the African American experience,
2) Resistance to theoretical dominance – goal is to reveal, understand, and respond to unequal power structures,

3) Culturally sensitive data interpretations – legitimize the knowledge and experiences of both the research and the researched,
4) Informed theory and practice – promote new theories and practices that are specific to the African American experience, and
5) Culturally specific knowledge – use of self-defined experiences of African Americans.

These methods are germane to the proposed study, methodology and theoretical framework.

High quality friendships "are marked by a high frequency of positive interactions and few negative interactions" (Berndt, 1999, p. 15). It follows, then, that students who have academically successful friends are more likely to be successful and vice versa. Yet Berndt (1999) suggests such influence is only as potent as the strength of the friendship. Moreover, some research (Farmer et al., 2011) on friendships has suggested teachers play a role in helping students form friendships. Berndt asserts that educators proceed cautiously in this endeavor unless the teacher has an understanding of the characteristics of the friends lest the connection prove to affect the student negatively in terms of school adjustment and engagement. Berndt explains: "Greater understanding of friends' influence could not only prevent these harmful effects but also suggest techniques for maximizing the positive influences of friends and friendships on school adjustment" (p. 26).

Transient students are shown to be less likely to form lasting friendships that benefit students academically. Results showed students are less likely to form trusted friendships based on high mobility rates of Latinos, thus increasing the difficulty of achieving academic success. The buffering nature of friendships is an advantage especially for Latino students who often encounter language barriers, student mobility (Ream, 2005) and cultural differences that often hinder academic success. The results of a longitudinal study (Benner, 2011) found Latino students suffer from feelings of loneliness and the academic repercussions it brings. Using indicators such as grade point averages (GPAs), mathematics courses taken, classes failed, and

student engagement, it was found that "adolescents who struggled with loneliness *and* who lacked support from

friends made poorer academic progress than those who reported increasing or consistently high loneliness *but* who had high levels of support from the friends they did have" (Benner, 2011, p. 565).

The Impact of Peers on Students' Success in Mathematics. Researchers seldom approach students in search of determining how academic success is attained (Walker, 2006) is based on categorizing the reasons students of color are successful with regards to mathematics by addressing the students directly. Hence, Walker (2006) addresses students directly; categorizing the reasons students of color are successful in mathematics. Students identified three areas of support leading to academic success in mathematics: 1) influence of peers, 2) familial influence, and 3) the influence of school adults such as teachers, administrators, and counselors.

The students were interviewed and three ideas emerged. The first being that peer influence was a positive. Many of the students had a circle of friends that included students that excelled and students who were average or below average. The students identified their families as their primary reason for achievement no matter the education level of the parents or the evidence or lack of achievement amongst their siblings. Each student spoke of great respect for their parents and a need to live up to the high expectations set. In some instances, siblings encouraged the students to work to be on par with their own academic achievement or to reach a level that the sibling lamented not achieving. Lastly, students related that their teachers were a significant component of their mathematical success.

Walker's (2006) research provides a positive discourse of what is helpful in catapulting student achievement with regards to mathematics. Admittedly, no one student's circle of support

was identical, however the theory that the support system exists and works to the advantage of the student is well documented through Walker's study at Lowell High School. It is asserted that peer, familial and school adults' influence can be used to encourage students to excel. This is in direct contrast to the assertion made by scholars such as John Ogbu (1986) that said influences serve as obstacles to student success, demonstrated by what Obgu terms as an "oppositional" stance to academic excellence.

Because mathematics is such a critical subject area for students, my research will be limited to African Americans who are successful in mathematics and what role, if any, positive friendships play in their academic success. The goal of my study is to increase academic achievement and engagement for African American students who, statistics have shown, lag behind national standards in mathematics and sciences (College Board, 1999). An empirical, qualitative study will be conducted and will focus on a small group of students who have cultivated meaningful friendships that have positively affected their academic achievement to identify commonalities that may be replicated in the future in an effort to increase achievement and engagement among other African American students. In view of the fact little is known about the underpinnings of African American students' academic success as it relates to mathematics, the results of this study may be used as a foundation to build upon to address the well-documented Black/White achievement gap.

Finally, studies convey research efforts regarding friendships and academic success. Published results point to a positive relationship between those factors, but there is a dearth of results specifically addressing factors within the context of African American peer relationships and success in mathematics courses. This researcher is proposing this specific context be

investigated in an effort to address the current achievement gap within mathematics for African Americans.

3 METHODOLOGY

The contents of this chapter illustrate the methods used to conduct this study including the analysis of the data. A review of the theoretical framework that guided the methodology of the study, the rationale and a restatement of the research questions are all included in the content. The remainder of the chapter explains: 1) the design that instructed my choice and use of participant observation and open-ended interviews as methods of data collection, 2) data collection, 3) data analysis techniques, and 4) trustworthiness and credibility.

The design of this qualitative study was ethnography. The selection of ethnography was appropriate for this study because while ethnography is primarily a tool of anthropologic researchers (Anyon, 1980, 1981a, 1981b; Cole & Scribner, 1974; Denzin, 1978; Eisenhart, 1988; Goetz & LeCompte, 1984; Lave, 1977, 1982, 1985; Pelto & Pelto, 1974; Spradley, 1979, 1980), educators have increasingly adopted ethnography as a means of exploring and analyzing behavior. Through ethnography, researchers are able to extract meaning beyond numbers and statistics to "translate our ethical concerns, our frustration at failure to reform, our anger over injustice, into disciplined questions and ways to pursue them" (Spindler, 1982, p. 5). Particularly, ethnography investigates culture and social experiences that occur in everyday life and provide "thick description" (Geertz, 1973) of the phenomenon being examined (Merriam, 2009; Wolcott, 1994). Merriam (2009) argues, "Thick description is a term from anthropology and means the complete, literal description of the incident or entity being investigated" (p. 43). Summarily, Wolcott (1987, p. 52) states the following:

> Good, solid ethnographic accounts do the very thing they promise. They help us understand how particular social systems work by providing detailed descriptive information, coupled with interpretation, and relating that working to implicit patterns and meanings which members of that society (or one of its sub-groups) hold more or less in common.

In other words, the reader should have a vivid depiction of the event in his or her mind, as if he or she were there in the moment of the experience being related by the researcher. Spindler and Spindler (1982) argue that "[m]aking the strange familiar is the usual task of ethnography" (p. 23); meaning that, in essence, ethnographers interpret phenomenon encountered in the field in such a way that the consumer of the knowledge would have the ability to relate.

Rationale and Research Questions

Ethnographic methodologies offer a voice to everyday people who "live" the experiences I, as the researcher, sought to capture through methods such as participant observations, interviews, field notes, memos and artifacts (Cohen et al., 2011; Crang & Cook, 2007; Denzin, 1978; Eisenhart, 1988; Goetz & Le Compte, 1984; Pelto & Pelto, 1974; Tedlock, 2005). Ethnography as a methodology required me, as the investigator, to draw from the participants the significance of sociocultural (Denzin, 1978; Eisenhart, 1988) and, in the case of this study and the following research questions, socio-emotional knowledge thereby allowing an understanding of the observed behavior (Cohen et al., 2011). Using ethnographic methodology, the study, therefore, examined the following questions:

> How do academically successful African-American high school students negotiate academic success in mathematics classes using peer relationships?

As an extension of the overarching question, the study addressed the following sub-questions:

a. What are the socio-emotional factors in peer relationships contributing to the academic success of these students in mathematics?
b. How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

Cohen et al. (2011) quote Morrison (1993) indicating "being immersed in a particular context over time not only will the salient features of the situation emerge and present themselves but a more holistic view will be gathered of the interrelationships of factors" (p. 466). Subsequently, only recently have there been studies engaging children as active participants in ethnographic research (Conchas, 2006; O'Kane, 2000; Valenzuela, 1999). James (2001) argues that children have a right to be recognized as social beings who are "competent interpreters of the social world" (p. 246). Through extended immersion in the lives of the high school students upon which this study focused, I endeavored to give adults a perspective of academically successful children via the lens of the participants. This was a pertinent point as children understand and experience the world differently from adults (O'Kane, 2000). Hence, Bulmer (1984) posits participatory techniques inherent to ethnographic research are essential when committing to gaining a clearer understanding of young people and their perceptions and cultural constructions.

Critical Race Theory (CRT) as a Methodological Framework

Critical race theory as a methodological framework (Solórzano & Yosso, 2002) was the vehicle by which participants of this study gave voice to or put into words their experiences, chronicling their paths to academic success in mathematics as African-American high school students using friendships as resources. Hence, CRT and ethnography were appropriate for this study as storytelling was a critical component of both

Socio-emotional Factors

This study examined socio-emotional factors that contributed to the academic success of African-American high school students who excelled in mathematics. Socio-emotional factors are defined as feelings or emotions that drive the relationships cultivated by the students. Of particular interest was the relationship between high school students and their friends as it related to their interactions regarding academic success in mathematics and addressed the research sub-questions: a) What are the socio-emotional factors contributing to the academic success of these students in mathematics? and b) How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

Methods

Research Site. *(The names of all places and people have been changed.)* Hillman High School, located in Shelby County, was the research site where the study took place. The school was located in an economically diverse, predominately African-American community in a major southeastern metropolitan city. Hillman held Title I status (Title I, 2004) and served 1,848 students of which 61.2% received free and reduced lunch (Racial Composition FY14, 2013) in grades nine through twelve with a difference of 25% fewer enrolled seniors compared to freshmen enrolled in the 2011-2012 school year (School Profile, n.d.). Title I status is a federal designation to assist in closing the achievement gap for schools whose student population is at least 35% low income. The racial demographics of the student body was 97.8% Black or African American, 0.8% Hispanic, 0.6% multi-racial, 0.4% Asian, 0.3% White, and 0.1% Hawaiian or Pacific Islander (Racial Composition FY14, 2013). As well, there were 90 teachers:

75% of whom were African American, 20% Caucasian, and 5% Other. Hillman was led by Dr. Soren, a white male in his late 30's.

Research site context. Hillman High School had gone through a series of painful transitions over the years. In 1988, two area high schools were combined to form Hillman in a consolidation effort by the school board. Once revered as the jewel of the community, Hillman soon had a revolving door of principals, teachers and disgruntled parents who were disappointed with poor performance year after year; constantly calling for reform. Over the last 26 years, Hillman has had no fewer than 17 principals. Academically, they have suffered as a result of the instability. Though Hillman is host to a math and science magnet program, its state test scores in those very subjects have routinely lagged behind other area schools in recent years. Parents often complained that Hillman and schools in south Shelby County in general had become the "step-children" of the county in favor of the more affluent communities in north Shelby that, parents believed, were outfitted with better facilities, superior teachers and more competent and innovative principals. This, in turn, translated to higher test scores and greater opportunities for students.

The participants in my study had three principals in the four years they had been at Hillman. Their 9th grade principal was forced out in the middle of the school year amid allegations of misappropriation of federal grant money, a chaotic atmosphere where food fights were commonplace, and teachers "giving away grades." It was his second year on the job as Principal after having been Assistant Principal at Hillman for 11 years when a group of parents went to the superintendent to make known their dissatisfaction. Here Mr. Turner, Madison's (a study participant) father and a member of the Local School Advisory Council at Hillman at the time, described the difficult period:

> It was painful because, you know, we have relationships. Parents, we had a group of parents against what we were trying to do because they had relationships built with Dr. X and it was just, I'm not gonna go into all the, all the history of it. The bottom line was, group, not a large group, small group of parents, basically put a petition...the petition, the idea behind the petition was not to get a lot of names. That wasn't the whole idea. We're not trying to say, here's 500 signatures and the names of, no, this is not a majority. What it is, is taking a flashlight. Let's illuminate what's going on and saying it's unacceptable. These are not standards, what's happening in this building. They're not standards. It became very heated, I mean. It became very heated. We had one meeting, I'll never forget. Dr. X and I are going like this. [He's motioning his fist slapping his other hand]. I mean, it was bad and, but, our commitment has always been kids first. Could care less about adults. And when I mean that, I mean, if you're a good teacher, oh my God, we'll lay it on the sword and we've done it. If you're a good educator, we'll do what we need to do. But as parents, it was just, it was unacceptable and not just for our daughter. It was just for the environment 'cause it was a terrible environment. I'm not even gonna go over all the things that were going on that were completely immoral and illegal. And so, we were promised and I'll never forget going to a meeting with S, not S, I forgot her name but she was Assistant Superintendent, a sister, she left. Now she's at CPS and I'll never forget going into a meeting, it was, um, probably late November, something like that and I walked up to her and I said, she said, we're working on it. I said, Okay. I said, because there's always a next step. Always a next step. And I said, let me very frank with you, we can go from here to media but I want you guys to correct it 'cause it's unacceptable. I said, you wouldn't have it in North Shelby. So, they corrected it. The interim principal, he did a good job. Basically, his job was to put the thumb in the dyke. He did that and then brought in Soren and his first year was hell because you still had remnants of teachers as well as parents who were running this thing like their own little fiefdom. This was a little money bank not just a money bank but also a bank of, just immorality in terms of, you know, giving out grades. Just doing...it was just a, a, a, just unbelievable. So, there's been a lot of upheaval (Turner Parent Interview).

An interim principal was brought in to complete the school year which gave the superintendent time to search for his replacement.

Dr. Soren began his term at Hillman during the participants' 10th grade year. After all the turmoil, there were still parents who were not happy with his selection as principal; for he was the first white principal ever hired to lead Hillman. Dr. Soren is of Hispanic-American heritage but appears to be Caucasian. Said Madison, "It's the first time I've ever had a mixed principal or yeah... That was different and he looked like superman. Everybody was like, Oh my God. So, I guess that kind of, the symbolism in it - this superman figure coming into the school and it's just

like, whoa, what's going on (Madison Interview)?" The comparison was not lost on the community as an internet blog ridiculed him as the "great white hope," coming to save Hillman from all its academic and social ills. Many argued that unless he was African American, he would not be able to make the connection with the students and teachers they felt was needed to right the Hillman ship. Mrs. Revere, a community member and owner of a daycare and after-school child care facilities, who sat on the interview panel explained the rationale for the choice:

> So, but with Soren it was, you are at the beginning of your career. You're obviously a rising star. I mean, his resume was perfect. You know, um, you've had experience in mixed, you know, or in predominately minority environments, a demographic similar to ours, so hey, you'll be perfect. You know what I'm saying. And you can't come over here and mess up, you know what I'm saying because that will be it for you, you know what I'm saying. So, I said, I think, let's give this a try. Now there were some people who didn't, involved people that didn't sit on the interview panel who were outraged that we had hired a white principal. And I was just, I don't, I'm just not that type, you know. It's just two kinds of people, good and bad, to me. And I wouldn't care if he was a Martian. In the shape that Hillman was in, we was...whooo, we needed E.T. Help! You know, so we came up with something different (Revere Interview).

In an ironic twist but not uncharacteristic of Hillman's history, Dr. Soren tendered his resignation at the end of the school year to take advantage of a better opportunity with greater responsibility in a neighboring county.

Choosing Hillman. With all the tumult at Hillman, why select its magnet program for the community's best and brightest? Mrs. Revere and the Turners shared the same sentiment for choosing to stay rather than bus their children to magnet schools in north Shelby. They believed in community schools and they had faith in the African-American community, in particular, to be the "village" that would shelter their children from harsh realities that awaited them once they left the community. Perhaps the Turners spoke most eloquently on why they stayed in this exchange:

> MR. TURNER: It was, what I wanted was, the first thing was self-confidence and so my personal feeling is that, you know, in the environment because I've seen it, I've

> experienced it myself going to Northwestern and I see what has happened. I went to African-American schools all throughout high school. So, I figured, you know what, if I could do it, certainly my daughter can and go to a great school. And, so I wanted her to build that self-confidence and I thought that in that environment where she's a minority, they're gonna steal that from her.
>
> MRS. TURNER: He always worried about her self-esteem.
>
> MR. TURNER: I think that's the first important thing.
>
> MRS. TURNER: He was like, we can't live in...
>
> MR. TURNER: They will rob you.
>
> MRS. TURNER: ...a majority Caucasian community. They will steal her...
>
> MR. TURNER: Nor did I want to take my precious daughter, with her brain power and give it to you. I think of it, it's kind of an asset. I want it to be an asset for my community. And I also wanted her to see the dichotomy. I wanted her to be proud of who she is. We've seen instances of children who went up there, my cousins, my nephew, my niece and nephew went to schools in [north Shelby]. Smart kids. I think at some point, they robbed, and then D, beautiful, and K, handsome. But D was, kind of looks like Madison to me, but pulling her hair, wanted her hair straight, long. I said, you're a beautiful girl. Are you kidding me? They wanna look like you. And so, don't, I didn't want her to be robbed of her essence and so, we were committed and then we said we're gonna make sure the school system gives her that (Turner Parent Interview).

Likewise, Mrs. Revere chose to keep her two children in south Shelby having first-hand experience of what it was like to be bussed up north to attend high school to an environment that was not always friendly to outside students as she was bussed in the 80's. Several years later when her niece attended a school up north, there were instances of Black History displays being destroyed and racial friction among students. Mrs. Revere not only believed it to be injuring to a child's spirit but she said, "when you are bussed out of your community you are very disconnected from the school and I, you can't help but feel like a bit of an outsider." In the end, Mrs. Revere insisted

> …when you live in South Shelby talking about going to North Shelby and your kid break a leg, God forbid, and you gotta get through 2 hours of traffic to get to him, you know. That was too far to me… but honestly, um, you know, I just believe in community schools. Because even in my own community, I worked to, in rezoning, to make my school more reflective of the community. So, it's not necessarily racism. It's just about having, I think you have community schools so they can serve the population around you because it's about accessibility. It's about, you know, like-mindedness. It's about a lot of things, not just race alone. So, I don't think that there's anything wrong with going, with Century High School or any other high school in North Shelby County. I just think if you wanna go there, you gotta live there. Go! Move there, you know. It's okay. And I've looked at those schools and considered that as an option for my own children but that option would have included moving. It never would have included a commute (Revere Interview).

Regardless of the maelstrom of activity surrounding the school, the magnet program was being sold to parents as an exclusive enclave where students would be protected from such unrest. Madison recalled the time period:

> And then it was gonna be the magnet program and the way they described it, so it was, that it was supposed to be like a private school within a public school. So we were like, okay, we'll give it a shot. I was completely against it. And it wasn't even because of the school. It was because of my friends. Like, everyone at Frost was going to North [county schools] and it was just like everybody had their applications together at the same time and everybody was doing their auditions or whatever they needed to do to get there. And I would just be like, awww, man. I can't (Madison Interview).

Indeed, the magnet program, as described by Trent, became like "family" to the four participants of my study who went on to forge new friendships and find academic success amidst the chaos.

The school choice as a research site was based on three factors: first, proximity to my residence to allow greater access and more extended time for observation. Second, after encountering Dr. Soren several times at community meetings, I had developed a rapport with him whereby he was aware of my research and my desire to conduct my research at his school. This helped in initiating entrée to the school and assisted in facilitating relationships with the school community. Third, the school was home to a science and mathematics magnet program that catered to a large population of African-American high school students, the ideal targeted

group appropriate to the purpose of the study. Magnet schools emerged as an answer to a 1960's mandate to desegregate schools in the United States (Williams, 2010). Students who lived outside the allocated geographic boundaries of the school who wished to apply to the magnet program were eligible to do so if they: 1) lived in Shelby county, 2) had taken Algebra I in the eighth grade, and 3) had an overall average of 80 or better in all mathematics and science courses.

As I drove to the school to meet with the principal, I found the approach to be surrounded by thick wooded areas that opened suddenly to beautifully manicured subdivisions, each developed by one family who owned the land along the street and beyond the immediate vicinity of the school. Aside from stately subdivisions, there were homes along the street that varied in size from modest ranch homes to appealing two story homes on basements. It was a picturesque neighborhood within a mile of a golf course where homes surrounded and backed up to the greens. Among the five subdivisions along the street of the school, four were well-established and one was under construction still, advertising home prices from $200,000 to $800,000. This particular development shared a round-about entrance with the golf course. The neighborhood as a whole was quaint and quiet.

Situated directly across from two of the subdivisions, the school sat back from the street at the bottom of a long, sloped drive leading to the entrance. Built in 2008, Hillman replaced the old high school which remained intact located next to the new school. There was a short vestibule upon entering Hillman before coming into a tall rotunda-like space with Student Services and administrative offices through doors immediately to the left and right. Through the next set of doors was a wide hallway leading to classrooms on its flanks. Straight ahead were entrances to the cafeteria on either side of open, curved stairwells leading to the next level. A

brick wall with an image of the school mascot and "Welcome to Hillman" greeted students as they poured in every morning. Display cases inset on the left and right housed impressive student artwork. Bulletin boards holding information ranging from student accolades to upcoming activities lined the halls on either side. Clocks were mounted from the ceiling alerting students of the time. When the bell rang to change classes, the clocks began to count down the time remaining to get to the next class.

Procedure

Initiating entry. As I began to ponder the topic for my study and the most ideal participants, I eventually determined Hillman to be the best research site. I met Dr. Soren at a monthly community meeting held by the district's school board member approximately two years prior to beginning my research. Upon engaging him, I began to share details of my study and my desire to conduct research at his school. Intrigued, he replied that he was amenable to the idea so long as I received approval from the school district.

One year before research was scheduled to commence, I submitted the required documents to the appropriate official within the school district; which included the school district IRB application, my approved IRB from Georgia State University and a copy of my proposal. After sending several follow-up emails to inquire about the status of my application and receiving no response, I ran into the school superintendent at a community meeting and mentioned my plight. "Email me," he replied, "and I'll take care of it." Within a day of emailing him, I learned that if the principal of the school was agreeable, I could have access to Hillman (see Appendix A).

I forwarded the email to Dr. Soren with a formal request to conduct research and was approved. I met with Dr. Soren in his office the week before school started to discuss my needs for the study. According to the criteria for the participants, the students were to: 1) have an

above average aptitude for mathematics, 2) be enrolled in an advanced placement (AP) or honors higher level math course, and 3) be friends. He indicated he had two AP Calculus classes that fit the description. He emailed the teachers to ascertain their interest in allowing me access to their classrooms and participating in my study. One willing teacher responded. I would be conducting my research in Mrs. Dean's Advanced Placement (AP) Calculus AB class. Dr. Soren introduced us via email and I immediately responded by thanking her and requesting a meeting to further explain my study, define her role and mine as well as answer any questions she might have.

Classroom context. My initial face to face meeting with Mrs. Dean was in her classroom after school on the second floor, 11th grade magnet hallway. The magnet hallway was the first hall to the right on the second floor from the center stairway. Mrs. Dean's classroom was painted a soothing bluish gray tone. The floor was covered with brown-speckled, white linoleum tiles trimmed in blue. Upon entering the room, the white board was to the left with a clock perched atop with math problems for each number like 6*2 for 12:00, $\sqrt{4}$ for 2:00 and -8 = 2 – x for 10:00 and would have been considered the front of the classroom. Just to the left of the whiteboard was a skinny whiteboard where homework was written for students to preview and take note. Above this space was a television mounted just above the white board to the left. Directly to the right of the door was a rolling cart with electric pencil sharpeners on top and a printer on the middle shelf.

There were many bright colorful posters lining the very top of the walls quoting inspirational messages such as "30 years from now, it won't matter what shoes you wore, how your hair looked, or the jeans you bought. What will matter is what you learned and how you

used it," or rules of engagement like "Remember: Always show your work!! How can you or I know how to correct your work if there is no work to correct? No work. No credit."

Across from the door were two large windows that overlooked large air conditioning units and a brick wall beyond the units. A promethium board sat in the corner between the white board and one of the windows. A putty colored file cabinet with a calendar taped to its side was positioned between the windows. Next to the file cabinet were three rows of four crates each with one lone crate at the very top situated on their sides acting as bookshelves replete with math books, binders, and manuals. Soft jazz music occasionally wafted from a radio on the file cabinet. There were stuffed animals on the crates and Mrs. Dean showed her school spirit with blue and white Hillman banners between the windows above the file cabinet. Although the room was chilly, a steel blue tufted leather armchair beside Mrs. Dean's desk added a sense of warmth to the space. Adding to the homey feel was a large black and red area rug beneath the desk, crates and the file cabinet. There were three other file cabinets in the room along the back wall; one displaying words of thanks from students over the years, and the other with small plastic drawers on top where students deposited and retrieved classwork, tests and quizzes.

Mrs. Dean, an African American in her early 40's, was one of twelve math teachers at Hillman. With a degree in mathematics education, she was at the beginning of her third year teaching AP Calculus and her seventh year at Hillman out of 19 years of teaching altogether. As I entered the room and introduced myself, I could sense she was nervous about the prospect of having me in her classroom recording her sessions with her students. I tried to be as reassuring as possible. I shared with her my research topic, my educational background and gave her a snapshot of my personal life as well. In Dr. Soren's email, he said I would only need to visit her classroom two to three times; although my email and all documentation clearly stated my intent

to be there a full semester. I immediately informed her of the miscommunication and reaffirmed my earlier assurances.

Every requirement for selection of the participants had been satisfied except friendship. Mrs. Dean noted that since the students had travelled with one another throughout the magnet program, she was certain friendships existed within her class. Mrs. Dean was actually teaching two AP Calculus classes but suggested 2nd period would be the better choice as there were a greater number of students from which to select participants.

Participants. Initially, the parameters of my study sample included 4 to 6 African-American high school students to be purposively selected (Cohen, et al., 2011) from a population of approximately 45 enrolled in Honors and/or AP Calculus courses in grades eleven and/or twelve. My criteria were:

1) African-American high school student between the ages of 16 and 18.
2) Enrolled in higher level mathematics course.
3) Must be friends as defined in chapter 1 of this text.

I asked that Mrs. Dean apprise her students of my research during her next class meeting and allow any willing participants to express interest and come forward. Initially, five students showed enthusiasm to participate. However, one student withdrew from the class before observations began. Table 1 provides a brief description of the participants, who from this point forward will be known as characters, including their ages at the start of the study.

Table 1

Cast of Characters

Character	Race	Sex	Age	Grade
Madison	African American	Female	16	Senior
Neil	African American	Male	17	Senior
Trent	African American	Male	17	Senior
Zora	African American	Female	17	Senior

Madison. With skin the color of dark caramel, Madison had a heart shaped face with high cheek bones. Long, thick flowing locks of ebony hair accented with soft auburn highlights cascaded along her face, midway her back into a tumble of curls. She stood at approximately 5 feet 3 inches tall with a very slight build. To some, she might have been described as delicate. Her favorite color was pink and she loved sparkles as was evident from the many pink sweaters, jewelry, hair barrettes, hot pink Ugg boots and socks she wore and her pink-themed "Sweet 16" birthday party earlier in the year; the blue sparkly nail polish, the sequined silver pencil pouch and silver metallic purse she carried daily. Quite appropriately, her friends called her "DJ Glitterful." While her outward countenance spoke loudly, Madison was very soft-spoken, reserved and singularly focused in class. In fact, her parents described her as "a natural introvert." I found her to be very friendly.

At 16, Madison was the youngest participant in my study and on track to be valedictorian of her class. With instructions from her parents, Mr. and Mrs. Turner, to "just do your best" in school, Madison skipped Kindergarten after exceeding the standard Pre-K curriculum at Mason Elementary. Her parents recalled their surprise at the first magnet awards program in ninth grade

where it appeared to be the "Madison Turner" show as Madison barely spent time in her seat, she received so many top academic awards. It continued year after year as she led her class to commencement as its valedictorian. In terms of career planning, Madison expressed:

> I'll do something in the medical field. I'll probably be a plastic surgeon or pediatrician and or I'll do something in journalism, broadcasting cause I really like that too. So, it might be director or screenwriter. Just a mix of things. Or I could do both. There are ways to combine them. So, I'll decide that later on (10.04.13 Madison Interview).

Madison's parents were very heavily involved at her schools. Her mother, a stay-at-home mom until Madison's Senior year, was the room parent for every grade throughout elementary school. In fifth grade, Madison's father, a self-employed executive recruiter, volunteered at Mason teaching the above level fifth graders Algebra. From that point forward, the Turners volunteered at Madison's and her brother's schools daily; calling it "kind of a love" and a "ministry." When asked her thoughts on her parents' level of commitment, she responded:

> Okay, elementary school, you just love your parents. You love your parents throughout but elementary school, you're like, Oh my gosh, I'm so happy they're here. In middle school, I always call it the time when you wanna be cool and you're trying to find yourself, and so then I was kind of like oh, you're here and I can't, I can't set myself apart from them but now I'm, it's just like, oh, they're here. I'm completely different. I'm my own person. I'm not [Mr. and Mrs. Turner's] daughter. I'm [Madison Turner], so, I'm fine with it. Cause they're really not here for me. They're here for me, but they're not. They're more so here for the other kids who really need someone to talk to and I have that. So, they're more so role models for them when it comes to coming here every day (Madison Interview).

While her parents were concerned that Madison may not have been ready socially to skip Kindergarten, she proved to be markedly socially adept and very mature. Indeed, it was not all work and no play for Madison. She was president of the Women of Hillman club (WOH) – a community service and sisterhood organization, vice president of Health Occupation Students of America (HOSA), secretary and representative of Beta Club, a member of the National Honors

Society, voted Ms. Magnet and until Senior year, a cheerleader. Choosing to focus more on her academics, she selectively removed herself from the cheer squad saying,

> Ummm...one before academics cause I did wanna make sure that I stayed on top of it. My academics were fine last year but it was just staying up every night. It was killing me. So, I did wanna get at least, try to get an hour of sleep back. And the other thing, they, they just weren't my cup of tea, the young ladies there. They are, they're different girls. They're very different. They like to do, they're kind of, um the people who like to grow up too quickly. They're that group (Madison Interview).

For her scholastic diligence, Madison was accepted at 8 of 13 colleges for which she applied. Rewarded with $1.2 million in scholarship money, Madison committed to one of the five Ivy League schools to which she was accepted.

Trent. Trent was a very engaging 17 year old with an outgoing personality that commanded attention. In fact, so animated was he that I found it difficult to keep up with him in interviews as he spoke very quickly but at length about whatever the topic at hand. He was about 5 foot 10 inches and a southern gentleman with chocolate skin and thick, dark, wavy closely cropped hair adorned a clean shaven face with light sideburns. Preppy would describe his manner of dress most days, donning sweaters draped across his shoulders and tied at his neck atop button down shirts accented with bowties of all colors paired with khaki pants or dress slacks and dress shoes that shine. He was not opposed, however to plaid shirts, blue jeans and sneakers.

Born in South Carolina, Trent was a descendant of the Free People of Color in a small community in South Carolina and could trace his heritage back to Thomas Jefferson's great grandfather in the 1600's. Trent began fourth grade at Mason Elementary when his parents divorced and he relocated to Shelby County with his mother. Together, Trent's parents had four children of which he was the youngest; however, both his mother and father had since re-married and he had a total of eleven siblings ranging in age from 25 years to 1 year old.

A gifted public speaker with a flair for debate, Trent's career goal was to study law and eventually become President of the United States. Trent was secretary of HOSA and had won the public speaking event every year at the state HOSA convention. He had a love for acting and was very involved in the Drama department. He was also a member of Men of Hillman. Although one might have had trouble detecting it, Trent maintained he had low self-esteem and did not readily identify himself as a likely math and science magnet candidate. Despite these self-reported characteristics, the magnet coordinator identified Trent as being in the top 40 of his class of 352 graduating Seniors. He received a full scholarship to a New England school and made an early decision to attend.

Zora. Zora almost presented herself as a 17 year old "Rocker" if one were to judge by her style of dress. Most days her slightly built frame was clad in a variation of a waist length, black leather jacket or a purple letterman jacket, an over-sized grey knit sweater, black tights and calf-length lace-up leather boots that zipped on the sides with sharp, burnished brass studs at the toe and heel. The "softer" side of Zora wore a single, gold necklace with a pendant and carried a black Coach purse but seemed to eschew any make-up or nail polish. Her chin length, thick, black hair was held back from her angular, cocoa face with a thin head band. In like manner, her brows were thick and often furrowed in concentration; so much so, there was an indention when they were not crinkled. At 5 foot 2 inches, she sometimes trotted rather than walked; albeit, her upbeat demeanor was belied by dark circles under her eyes along with a habit of anxiously biting her lips and her short nails.

Zora's father, a mechanical engineer, and mother, a paraprofessional in another county, moved Zora and her three older siblings to Shelby County from Jamaica Queens, New York when Zora was 11 years old. Finding it difficult to make the adjustment, Zora continually sought

opportunities to “shine” as she put it. For instance, Zora shed a tear as she recalled her attempts to make the cheer squad, saying:

> It was the same as, like I said before, I was, people didn't let me shine all the time. So, the fact that I got into cheerleading, people were shocked in middle school. So, there were some people who actually told me that I bribed the coach. And I was kinda ashamed about that. Yeah, it was very traumatic. I didn't really like it. But, um, after a while, and then I got into, um cheerleading 10th grade year - JV cheerleading at Hillman here. And after that, it was like, I don't think I want to cheerlead anymore. Especially, just not out here. It was just...It wasn't the same because in New York, it was like, it was a way, and I don't know if it was because, if it was the difference between a community-based cheerleading squad and then the one at school. I don't know if it was just that but it just wasn't the same because the cheerleaders, they wasn't, and I don't think it was just because of me, it was just like as a group, um, they didn't really associate with all the people. Like, they didn't try to make friends with everybody. They just kind of stayed in little tiny cliques as they just moved along. So, it wasn't like the same anymore. [Zora begins to tear up]. Oh crap...I'm sorry (Zora Interview).

Notwithstanding, Zora found a place for her talents in Beta club, as a WOH representative, National Honor Society, Future Business Leaders of America, Spanish Honor Society, Track and Dance Masters. Extremely busy as she was, Zora was steadfast as an academic and ranked in the top 20 of her class and intended to become a corporate or forensic accountant. .

Zora applied to 16 colleges from which she received 11 acceptance letters. She committed to a major university in the southeast United States with $444,000 in scholarship funding not including additional monies from a state scholarship.

Neil. Five foot eleven inches and thin in build, Neil was the consummate “Tech Nerd” and could often be seen in sweats and sneakers or t-shirts and baggy jeans with brown leather boat shoes. With high, prominent cheek bones, his oblique face was the color of amber on which grew a slight mustache and scraggly goatee. Neil spoke in a very measured, monotone voice but became somewhat animated when chattering about his passions: robotics and engineering.

Originally from Ohio, Neil moved to Shelby County with his parents and two older sisters when he was in third grade.

Very matter-of-factly and almost as an after-thought, Neil told me in our initial "Getting to Know You" interview he had been living with diabetes since the age of 4. When I inquired which type he said, "Type 1. Um, what else? I don't know. I like to do stuff for fun. I like to think about different things I can do that's like out of the ordinary, like things I can invent or something." He went on to tell me about his desires to be an engineer and work for Google, his robotics inventions, his siblings and so on. I was intrigued, however. I wanted to know more about how he coped with the disease. I asked how he learned of his condition and he replied:

> Doctor. Like, I was just like, it was like probably the week before, well a couple of weeks. It was over the process of a couple of weeks. Like, I would wake up a lot. Um, I might have to use the restroom a lot. I would get dehydrated a lot. They was like wondering what was up with me. One night, I asked my parents to take me to the doctor the next morning. So they was like, okay, we'll take you to the doctor. Went to the doctor. They took me to the hospital. Went to the hospital, then they came in. They was like, you have Type I diabetes. I didn't know what they was talking about at the time. I was like, what's diabetes. Never heard of it in my life. But, um, I mean, at first I didn't even know nothing about it. I just knew I was just getting shots and stuff but I didn't know like what was diabetes. I didn't even realize I had it, til like, probably until I was like 6. When I turned 6, yeah, I understood all. My parents explained it all. I mean, it's not that hard to live with, though. Cause I barely even notice it now. I don't have to really do too much with it (Neil Interview).

At age 17, Neil monitored what he ate and injected himself daily with insulin.

Undoubtedly, diabetes had not slowed him. Neil was president of four clubs at Hillman: Technology Students Association, National Society of Black Engineers, Robotics and Men of Hillman – the fraternal twin of WOH. Involved in robotics since middle school, he spent copious amounts of time building robots for competitions on all levels – local, state and national. Like his father and paternal grandfather, Neil desired is to become an engineer. However, Neil's extracurricular activities may have affected his academics. "Neil does not have an A average.

Neil has a B average, a B average. So he's in the top 50%" (Magnet Coordinator Interview). He has committed to a small technology-focused college in the Southeast.

Data Collection Techniques. Four data collection techniques were employed to collect qualitative descriptive data: observations, interviews, collection of student artifacts, and researcher introspection.

Classroom Observations. Classes at Hillman were on what was termed an "A/B/C" schedule. There were a total of seven classes and one seminar. Students were assigned to seminar classes based on the greatest academic need first. For instance, the characters in my study were all assigned to AP Calculus seminars in an effort to reinforce lessons learned in class in hopes of increasing understanding and boosting AP exam scores at the end of the school year.

Although there were a total of eight periods, on the A/B/C schedule only five periods met per day which allowed teachers 70 minutes of instruction per class session. Some classes met on A and B days, some B and C days and others A and C days. The A/B/C schedule was a rolling one meaning that the first day of school, Monday, was an A day, Tuesday, a B day, Wednesday, a C day and Thursday would go back to an A day. The schedule continued on in that fashion. Figure 1 provides a visual of the schedules indicating the order of the periods meeting for each particular schedule.

Figure 1. A/B/C Schedule of Classes at Hillman

Mrs. Dean's AP Calculus class met on A and B days. Two of the characters were in her seminar class on C days. The other two attended AP Calculus seminar with a different teacher. I began observations during the sixth week of first semester on an A day, observing on A and B days when instruction was taking place for a total of 24, 70-minute sessions. I did not observe on days when tests were being administered or when Mrs. Dean was absent.

The week before I began observations, I met with Mrs. Dean and the characters to introduce myself, discuss my study, answer questions and distribute consent and assent forms. Since the characters in this study were 16 and 17 years of age, parents' consent as well as participants' assent was obtained. The letters of consent and assent informed the parents and the characters of the purpose of the research study, the methods used, and the duration of the study. The consent and assent forms asked permission to audiotape and/or videotape the interviews conducted. Three characters returned the forms on day one of observation. The fourth character submitted his form a day later. Formal written consent was also obtained from the principal. The characters were advised that participation was voluntary and that they were free to withdraw from the study at any time and that there would be no adverse effects on their work or grades in school.

Researcher role. On observation days, I sat near the rear of the classroom with an audio recorder and two spiral bound notebooks. I used one notebook as my observation log and the other to record researcher memos and field notes taken *in situ* (Cohen et al., 2011; Crang & Cook, 2007) or as situations occurred. Collecting data *in situ* resulted in what, Geertz (1974) described as "rich, thick descriptions" of the characters, their surroundings and their behaviors. Observation was at the core of this ethnographic research (Crang & Cook, 2007; DeWalt & DeWalt, 2011) and enabled me to observe what the characters may - consciously or

subconsciously – not have been willing to voice (Cohen et al., 2011). Further, Cohen et al. suggests that "[b]ecause observed incidents are less predictable there is a certain freshness to this form of data collection that is often denied in other forms, e.g. a questionnaire or a test" (p. 457). Observation was an extremely adaptable data collection tool that allowed me access to participant interactions in a social context (Cohen et al., 2011; O'Kane, 2000).

During observations, I paid close attention to where and with whom the characters sat and how they interacted, including body language. I took note of the characters' synergy with one another and the teacher. I looked for signs of understanding and frustration with the classwork and what reaction it elicited from other characters and the teacher. I dressed in jeans and a sweater most days to blend in with the students. Initially, the students were curious about my presence but soon fell into their routines, even greeting me upon arrival and bidding me goodbye when class was over.

To gather data amidst high schoolers and conduct ethnographic research successfully, the students must become comfortable in my presence and carry on in the same manner they would if I were not present. Peshkin (1982) argues "good ethnographies powerfully portray and illuminate concepts and relationships" (p. 53). For many ethnographers, there is an intimacy that exists between the researcher and her chosen study. Further Peshkin emphasizes a "close association" (p. 50) amongst (1) who the researcher is personally, (2) the type of research conducted, (3) researching (the methods used) and (4) results. Hence, subjectivity must be acknowledged. I did so by recording my feelings while in the field in a journal as I observed the classroom as well as during all interviews.

Interviews. A total of 15 semi-structured student interviews (Cohen et al., 2011; Crang & Cook, 2007; Merriam, 2009; Roulston, 2010) were conducted over the seven month research

period and were transcribed using Transana, a software package used to analyze audio data or digital video. Roulston (2010) defines semi-structured interviews as consisting of open-ended questions that are followed up with probing questions based on the participant's initial response. With the permission of both seminar teachers, the semi-structured interviews conducted with each character took place during seminar on C days in the media center.

During the first week of observation, I collected the characters' email addresses and began scheduling interviews. I interviewed each character individually initially, gathering information such as where they attended elementary and middle school and the number of siblings they had to their definition of friendship and how they felt about math. When I met the characters, they each identified another member of the group as their best friend. Therefore, the second interview with the characters was with the person they identified as his or her best friend. These interviews took place near the end of the semester. I asked questions such as, "How important has your friendship been throughout high school?" as well as questions about particular classroom interactions. My third interview with the characters was a group interview at the beginning of the second semester where I asked follow up questions resulting from early data analysis. The characters also apprised me of how they finished out the first semester in AP Calculus. A subsequent interview was conducted with the two male characters as well to delve further into their performance in the class for a total of eight student interviews. Three of the remaining seven interviews were with the teacher of the class: one at the beginning of the study, the second near the end of the first semester and lastly, one during second semester. Among the topics discussed were the nuances of how she taught the class, her interactions with the characters and how they were fairing in the class. To understand more about the school and the surrounding community, I also interviewed the principal, the magnet coordinator, a community

member/parent, and the parents of one of the characters who were heavily involved as school volunteers.

The interviews were audiotaped and lasted an average of 64 minutes per session. Several brief unstructured interviews with the characters and teacher – free flowing conversations where both the researcher and the character inquire of one another (Roulston, 2010) - took place throughout the course of the study. Semi-structured interviews and ethnographic interviewing techniques (Roulston, 2010) were employed using an interview guide (Appendix B). Roulston states that "[t]he purpose of ethnographic interviewing is to explore the meanings that people ascribe to actions and events in their cultural worlds, expressed in their own language" (p. 19). The interview guide was comprised of open-ended questions to allow the characters to speak at length of their experiences as African-American students negotiating high level mathematics classes. Subsequent interview questions were prompted by the initial responses of the characters and observed classroom interactions.

Collection of Artifacts. Artifacts collected include: 1) pictures of the daily schedule posted in the school; 2) handouts distributed by the teacher to give context to portions of the data analysis; and 3) emails from administrators providing scholarship information, college admissions and selections, and school demographics. Data collection through documents (artifacts) was affirming of the proposed study and its characters (Prior, 2003).

Researcher introspection. Crang and Cook (2007) suggest that the examiner, as an ethnographic researcher, "develop a linguistic self-reflexivity from start to finish of [the proposed] project" (p. 26). Researcher memos documenting thoughts and revelations that informed the research were recorded in a journal throughout the process of data collection and analysis to assist in the development and clarification of emergent themes (Crang & Cook, 2007;

DeWalt & DeWalt, 2011; Saldaña, 2013). All personal "off the record" thoughts and observations that informed the study were recorded, reflected upon, and ultimately produced a deeper understanding of myself in the process, the characters and the environment in which the study took place (Crang & Cook, 2007; DeWalt & DeWalt, 2011). Clarke (2005) states, "Memos are sites of conversation with ourselves about our data" (as cited in Saldaña, 2013, p. 41). Researcher memos afforded me an opportunity to reflect on and write about how I related to the characters, the research questions, the choice and application of codes, emergent patterns and themes and issues with the study and have been analyzed and included in the final report.

Data Management and Analysis

The process of data analysis was conducted while collecting data and well after (Merriam, 2009; Saldaña, 2013). Merriam (2009) cited several ideas for analyzing data from Bogdan and Biklen (2007) which were particularly useful. First,"[f]orce yourself to make decisions that narrow the study" (Bogdan & Biklen, 2007, as cited in Merriam, 2009, p.171). This ethnographic study produced copious field notes, interviews and memos. Discerning what was appropriate for the study when analyzing the data was salient in remaining focused on the research questions. In the field, it was impossible to perceive the nature of the data collected beforehand; however, as Bogdan and Biklen suggested, I "try[ed] out ideas and themes on participants" (as cited in Merriam, 2009, p. 172) by asking the characters to comment on patterns that began to emerge.

Three units of analysis were under consideration:

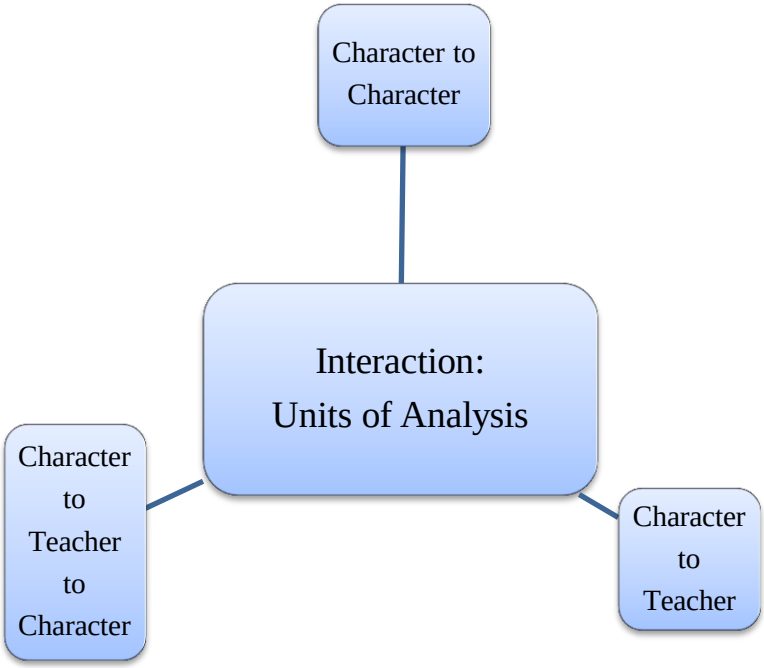

Figure 2. The Study Units of Analysis

Character to character interaction involved one character communicating with another character about matters involving mathematics support, such as instruction, learning, and/or tutoring. The units of analysis developed as instances of clarification of concepts and asking/answering mathematics related questions. Character to teacher interaction entailed one on one instruction and communication during lectures. Character/teacher/character interaction concerned interchanges that began with a character and the teacher and resulted in another character entering the exchange to assist in providing clarification or to ask a question regarding the initial exchange.

The data analysis procedure for the complete study is depicted in Table 2.

Table 2

Initial Mapping of Research Questions and Data Collection and Analysis

Research Question	Data Collection	Unit of Analysis	Data Analysis
How do academically successful African-American high school students negotiate academic success in mathematics classrooms using peer relationships?	Observations Character interviews	Character to character	Categorized and coded evidence of character behavior regarding social interactions from data collected in field notes. Transcribed/reviewed audio recordings of interviews and researcher notes regarding topics such as: character definition of academic success in mathematics; coping mechanisms used to negotiate academic success in mathematics classes. Transcribed/reviewed audio recordings of interviews and researcher notes regarding topics such as: teachers' experiences with successful high school students; and teachers' observed character interactions in mathematics classes.
What are the socio-emotional factors contributing to the academic success of these students in mathematics?	Observations Character interviews	Character to character Character To Teacher Character to teacher to character	Categorized and coded evidence of student behavior regarding socio-emotional factors from data collected field notes. Transcribed/reviewed audio recordings of interviews and researcher notes regarding units of analysis such as: character to character socio-emotional behaviors; character to teacher socio-emotional behaviors; and socio-emotional behaviors involving teacher and more than one student. Transcribed/reviewed audio recordings of interviews and researcher notes regarding units of analysis such as: teachers' perceptions of socio-emotional behaviors regarding topics such as: character to character socio-emotional behaviors; character to teacher socio-emotional behaviors; and socio-emotional behaviors involving teacher and more than one character.
How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?	Character interviews	Character to character Character to teacher Character to teacher to character	Transcribed/reviewed audio recordings of interviews and researcher notes for character perceptions of whom or what most contributes to academic success. Transcribed/reviewed audio recordings of interviews and researcher notes for teacher perceptions of whom or what most contributes to character academic success.

Coding. The data collected from observations, interviews, and researcher memos were organized and managed through the use of coding. Coding is the designation of shorthand terms used to identify specific aspects of data collected (Bernard, 2002; Merriam, 2009; Saldaña, 2013) and was applied in the process of my data analysis process. Coding is a cyclical and continual process as the researcher works to discover emergent themes. As cited in Saldaña (2013), "It leads you from the data to the idea, and from the idea to all the data pertaining to that idea" (Richards & Morse, 2007, p. 137).

Five coding techniques were used: 1) structural coding, involves application of codes based on content or a conceptual phrase (MacQueen, 2008; Saldaña, 2013); 2) in vivo coding, codes derived from words or phrases (Bernard, 2002; Saldaña, 2013); 3) subcoding, a secondary code applied to a primary (Gibbs, 2007; Miles and Huberman, 1994; and Saldaña, 2013); 4) eclectic coding, a transitional phase of coding that collapses codes that are similar in context into a single primary code; and 5) axial coding, narrows the focus based on most prominent emerging themes (Saldaña, 2013).

All fifteen transcribed interviews were uploaded to Dedoose (www.dedoose.com), an online coding and qualitative data analysis software (CAQDAS) that was used for coding and analysis of this study (Saldaña, 2013). CAQDAS programs are essential to advancing organization and identifying emergent themes and patterns within the research. However, after coding the first three interviews, Dedoose suffered a catastrophic failure worldwide that resulted in a loss of all data uploaded within the previous 36 days. Any new registrants within that time period, including me, were not captured. It was with careful consideration that I moved forward with Dedoose once again, deciding to download each interview to my Google cloud immediately after coding. All first cycle coding was done in Dedoose using structural, in vivo and subcoding

techniques. In addition to downloading the coded interviews, I also downloaded the coded excerpts by category along with any memos made in Dedoose. All files were frequently backed up to my external hard drive.

Transitional and second cycle coding was done by hand. I created files on my Google cloud for each excerpt with a primary or parent code (Gibbs, 2007; Saldaña, 2013) and named those files as such. Excerpts with children or secondary codes were placed in primary code files and named first using the parent code, then underscore child code; for example, "Friends_Support." Using Microsoft Excel, I listed each parent code in alphabetical order and placed corresponding children, grandchildren and great grandchildren underneath (Appendix C). I color-coded each level for ease of recognition (see Table 3 below).

Table 3
Code Hierarchy

Code Hierarchy	Color
Parent	Green
Child	Blue
Grandchild	Purple
Great-grandchild	Gold

Each interview was coded thoroughly from the beginning to the end regardless of whether the content was directly related to the research questions. To illustrate this process, any comment related to math in general was coded as such. Comments about the AP Calculus class received a "math" primary code and a "Calculus" secondary code. Further, the arrangement of the desks in Mrs. Dean's classroom was important as it indicated how the students would interact

in class for the day. These comments were given a "math" primary code, a "Calculus" secondary code, and then third level code of "seating." Hence, "math" would be the parent code, "Calculus", the child code, and "seating", the grandchild code. The name of the file containing this particular excerpt was "Math_Calculus_Seating."

There were a total of 804 excerpts and 293 codes including: 57 parents, 189 children, 42 grandchildren, and 5 great-grandchildren. Friese (2012) advised against a high quantity of codes lest the process of analysis become cumbersome; however, I was within the recommended range of 120 to 300 for a final code count. Nonetheless, I was daunted by the quantity of codes. To get a handle on the data, I printed every excerpt along with the spreadsheet. I studied the spreadsheet and cross-referenced the excerpts and began to eliminate codes and categories that were not germane to the research questions or did not contain enough data to substantiate. Applying eclectic coding, I also combined codes that were similar in theme and highlighted all codes I wanted to further analyze. For example, "seating" appeared as a child code to two parent codes, "Dean" and "Math." I combined these two categories into one using "Math" as the primary code. I discarded codes such as "Dean_Career Planning" and "Hillman_Partnerships" as they had little to do with the study; yet, I highlighted codes like "Friends_We All We Got" and "Magnet_Fostering Friendships" to delve deeper.

I chose not to code my observations and memos; instead, I read them several times and matched the observations to corresponding coded excerpts. I then considered each code as it related to the research questions and the purpose of the study while making note of codes with the most supporting data. Saldaña (2013) suggests recording emergent codes in a separate file or "codebook" (p. 24) including a brief description and example as a reference. This technique facilitates categorization or re-categorization of codes into over-arching themes. Accordingly, in

a third notebook, I documented emergent codes, recurrent patterns, and themes. From this reiterative process, themes of friendship and support began to emerge.

Inquiry Activities

This study involved a cyclical schedule of data collection and analysis in an effort to discover emergent themes (Cohen, et.al, 2011; Wolcott, 1992). This necessitated a significant measure of project management coupled with the flexibility required to allow the research to unfold. Table 4 outlines schedule of activities for the research conducted.

Table 4

Schedule of Inquiry Activities

Time	Activities
August 2013	Entry initiated
September 2013	Observations began 9/16 Semi-structured Interviews Unstructured Interviews Researcher Introspection Data Transcription
October – December 2013	Observations Semi-structured Interviews Unstructured Interviews Researcher Introspection Collection of Artifacts Data Transcription Data Analysis
January – March 2014	Semi-structured Interviews Researcher Introspection Collection of Artifacts Data Transcription Data Analysis
April 2014	Researcher Introspection Data Transcription Data Analysis
May 2014	Researcher Introspection Collection of Artifacts Data Transcription Coded Date Data Analysis Began Writing Dissertation
June – September 2014	Data Analysis Researcher Introspection Continued Writing Dissertation

Trustworthiness and Credibility

Although qualitative research is unique and situational, constructs can be put in place to ensure trustworthiness and credibility. While it can be an arduous task creating a replicable, generalizable study, Goetz and LeCompte (1984, p. 108; as quoted in Eisenhart, 1988), maintain ethnographic studies can be replicated if the following five objectives are meticulously described:

1) The choice and use of settings and people in the study,
2) The social conditions under which the study takes place,
3) The role and status of the researcher in the study,
4) The theoretical or analytic constructs used to guide data collection and analysis
5) The data collection and analysis procedures used.

These parameters, I believe, have been satisfied. In keeping with these objectives, other researchers seeking to conduct similar studies in varying other settings will be better able to compare their findings to this body of research.

Further, methodological triangulation (Denzin, 1970; Cohen, et.al, 2011) was used to increase the validity of this study. This involves: 1) using the same method at different times or 2) using different methods on the same subject. There are also two categories of methodological triangulation as outlined by Denzin (1970), "within methods" and "between methods." Triangulation within methods is a check on reliability and theory confirmation where replication is concerned. Triangulation between methods is when more than one method is used to achieve an objective.

For the purpose of my study, I employed triangulation between methods using different methods on the same subject(s). For example, I asked questions of the students and the teachers during the interviews that directly related to observed behaviors in the classroom to verify or dispute my analysis of the observed behavior. I would routinely state my assessment of the

situation for confirmation or clarification by the subject. I also used the collection of artifacts to affirm statements made during interviews. As Campbell and Fiske (1959) posited, "Triangulation is a powerful way of demonstrating concurrent validity, particularly in qualitative research" (as quoted in Cohen, et.al, 2011, p. 195).

Confidentiality and Security of data. Pseudonyms were applied to protect the identification of the characters. Recordings and transcriptions of interview data and observations were stored on the researcher's password and firewall-protected computer. Written data and student artifacts collected were kept in a locked safe or filing cabinet at the home of the researcher. Data collected per participant was not comingled with that of other participants.

4 RESULTS

The purpose of this study was to explore the nature of socio-emotional factors in the relationships between school friends and to examine ways in which students negotiate academic success in mathematics through these relationships. The study was an ethnography consisting of observations of four characters conducted in one advanced placement (AP) Calculus AB class along with interviews with the characters, the teacher, the principal, the magnet coordinator, the parents of a study participant and a community member/parent. This chapter provides: 1) a restatement of the research questions, 2) a review of the methods of analysis, 3) discussion of the emergent themes using supporting data collected in the field and 4) a summary of the findings.

Research Questions

The research question and sub-questions that guided this study were:

How do academically successful African-American high school students negotiate academic success in mathematics classes using peer relationships?

a. What are the socio-emotional factors in peer relationships contributing to the academic success of these students in mathematics?
b. How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

Methods of Analysis Review

My analysis and interpretation of the data was grounded in critical race theory (CRT) and guided by the following questions:

1) What are the indicators in the students' narratives that provide insight into the nature of socio-emotional relationships that emerge as students engage with peers in mathematics classroom?
2) How do students see themselves vis-à-vis the other partner/peer in the group?
3) How would their stories reflect themes in their lives that are pertinent to their success in mathematics?

This study focused primarily on storytelling coupled with observations as the two major data collection techniques. There were a total of 24 sets of observation notes and 15 interviews. Each interview was coded in its entirety. The observations and interviews were also parsed according to the three units of analysis outlined in chapter three of this text: 1) character to character interaction, 2) character to teacher interaction, and 3) character to teacher to character interactions. To answer the research questions, I focused particularly on socio-emotional factors and perceptions related to the characters' friendships and their academic success in mathematics that emerged from the data. The socio-emotional factors (Santrock, 1995) embody the personalities and emotions that encapsulate the relationships of the characters and their interactions in the mathematics classroom and beyond. The perceptions are representative of the characters' understanding of their friendships, what it meant to them, and how they negotiated mathematics' classrooms and academic success using those friendships. These perceptions were primarily direct quotes from the characters. To narrow the focus of the study, five coding

techniques were employed to mine the data compiled from the observations and interviews conducted: 1) structural, 2) in vivo coding, 3) subcoding, 4) eclectic and 5) axial coding. A description of each and how it was used is provided in chapter three of this text. At the conclusion of the iterative cycles of coding, several themes began to emerge.

I wanted to first establish the basis of the characters' relationships. For instance, how did they meet? How did they become such good friends? How did they feel about one another and what did their friendships mean to them? What was their definition of friendship? Were their friendships transformative? Were they protective? I also needed to understand the effects of the characters' friendships on their performance in mathematics and how they interacted with one another in the classroom. Did their friendships affect how they approached mathematics and academic achievement? Did their classroom interactions inform their understanding of the mathematical concepts or how they studied? From questions such as these, similar emotions and perceptions surfaced across the characters' responses and their observed classroom behaviors; thus, creating patterns and emergent themes.

By giving the characters a voice to speak to their academic success and how friendship played a role, the findings of this study show that the characters' friendships were of particular importance to them in navigating academic success in their mathematics classrooms but the reasons varied for each. The characters' academic identities and behaviors were similar and thus, the characters were attracted to one another. The characters relied on one another for academic and emotional support not only in the mathematics classroom, but a significant portion of their social time outside the classroom was spent with one another and informed their interactions with one another in the mathematics classroom.

Findings

As a result of the data analysis, seven themes emerged related to socio-emotional factors and perceptions about how the characters negotiated academic success in mathematics classes using peer relationships:

1) Selective narrowing of social interaction
2) Interpersonal relationships affect academic identity and behaviors
3) Interpersonal engagement
4) Pursuit of emotionally gratifying interactions
5) Satisfaction of emotional needs through social networks
6) Effect of collaborative learning
7) Illusion of control

As depicted in figure 2, the findings are categorized by the emergent themes which are underpinned by both the characters' perceptions and socio-emotional factors that are relevant to the themes. Further, the characters' lived experiences are highlighted through storytelling and represent the heart of this study. Therefore, for each socio-emotional factor and perception introduced, I presented stories using the characters' voices as evidence of each. Socio-emotional factors and perceptions written in quotations are direct quotes of the characters. Finally, there are instances of overlap of the themes and the stories. Thus, the stories selected to illustrate a particular theme may be applicable to other themes.

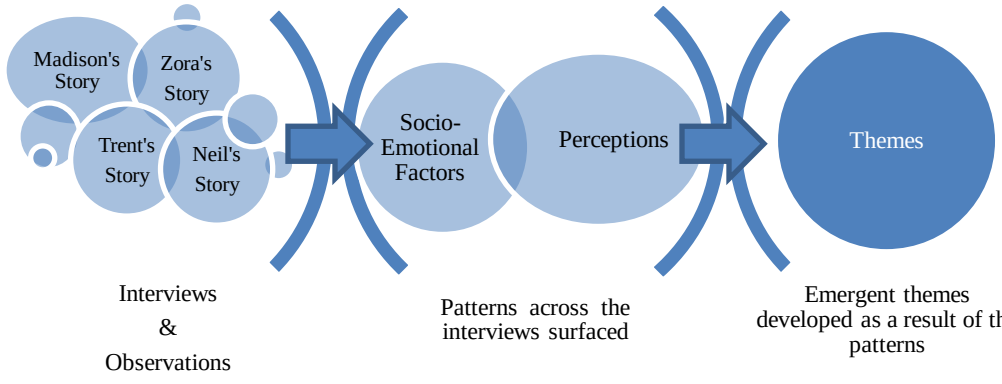

Figure 3. Emergent Themes in socio-emotional factors and perceptions of friends in the study

Theme 1: Selective narrowing of social interaction

A desire for the characters to associate themselves with like-minded individuals emerged in my analysis of the data. Although they each framed what friendship meant to them differently, the characters were intentional in how they chose their friends. Performing well academically was important and surrounding themselves with individuals who shared the same attitudes and behaviors about academic success was important to the characters. Each of the students indicated having friends outside the magnet program. With that though, they expressed difficulty in managing those friendships as a result of not seeing them very often. Madison expressed, "It's just the people who aren't in the magnet program, it's kind of hard for me to stay in contact with them" (Madison Interview). Because the magnet schedule was based on the cohort of students within the program, the students were not often scheduled with others from the "general population" outside of electives such as broadcasting or classes that all students had to take like physical education. Otherwise, all magnet students travelled together throughout the curriculum for the entire four years of high school and inevitably saw the same faces in their classes year after year; thus perpetuating friendships like the ones cultivated by the characters of this study.

Perception: Natural "gravitation." While the magnet program played a role in fostering friendships, Neil termed their attraction to one another as a "natural gravitation" toward like-minded people but acknowledged that choosing friends responsibly was "one of the first responsibilities that you should get" as a child. When describing the kind of person he would choose as a friend, he noted:

> I want, to me, I really like to be around people who don't down their self. That's like a really big pet peeve for me. Like, if you down yourself, it's just, I don't wanna be around you. Like, honestly, I expect you to be, to think of yourself as a great person. I know

> everybody can't do that or, like, they won't do that but at least try to. If you think about it, like, if you believe you're a good person, believe you can strive for things, you'll be better in life. Some might people might not believe that but, hmmm, it's just me (Neil Interview).

At the beginning of the school year, Neil would survey his classmates in an effort to identify the ideal person to engage as a friend. To be considered as a potential friend, he stated:

> If you're like, awww...thinking you're too cool, stuck up people - no, no. If you're smart, I'ma automatically get you as number one. Like, I see that you're smart, yeah, you're number one first. Then, I'll see more attributes of you, then I'll just gravitate towards you… Two, you're not, like a class clown. Like you not, like you can be silly but don't be too silly where I can't learn. Uh, three – leader. Like, if you're a leader, yeah, I'll definitely be around you cause, you know, I wanna be a leader (Zora-Neil Interview).

Neil further expressed:

> Like, I surround myself around those type of people who want to be something big. Cause I believe that does affect how you want to turn out in the future and how you're gonna turn out in the future (Neil Interview).

Perception: "Grow[ing] up too quickly." Several events shaped the characters, their views of friendship, and their friend selection process. The following transcript includes two excerpts from my first interview with Madison. In the first excerpt, she describes her friends and why they are ideal. In the second excerpt, she explains why she chose to remove herself from the cheering squad.

> ***Excerpt 1.*** And they've just been really cool. I like that they're...I like people who still wanna be a child, like who aren't trying to grow up too quickly. I… that's another big problem is a lot of us are trying to be fast and just grow up too quickly and it just doesn't make sense. You're still a child and you might as well enjoy that now. So, yeah, then we kind of just started hanging out. We go on HOSA field trips together. It just kind of came together (Madison Interview).

> ***Excerpt 2.*** Ummm...one before academics cause I did wanna make sure that I stayed on top of it. My academics were fine last year but it was just staying up every night. It was killing me. So, I did wanna get at least, try to get an hour of sleep back. And the other thing, they, they just weren't my cup of tea, the young ladies there. They are, they're different girls. They're very different. They like to do, they're kind of, um the people who like to grow up too quickly. They're that group (Madison Interview).

The cheering squad was comprised of both magnet and non-magnet students and Madison held strong views about each group. Non-magnet students were often referred to as the "general population" whom Madison regarded as "what the stereotypical African-American person looks like to most people" (Madison Interview). Madison felt she owed a debt to her community to maintain her status as a high achiever and overcome the stereotypes that besiege the African-American community regarding low academic achievement and overall appearance. She expressed, "….I gotta be something better. I can't, I can't let people continue to think that this is the way that we look so, it is…it does give some type of pressure a lot of times cause you think…(long pause) I gotta strive but it's hard but I really need to do this for our people" (Madison Interview).

Magnet students were a group unto themselves, mostly separated from the general population at Hillman but there was a divide within the magnet program as well. As related by the characters, there were three distinct groups within the magnet program: 1) the very social group with average grades, 2) the socially awkward, immature group, and 3) the "in between" group who, overall, had higher grade point averages and could assimilate with either group one or group two. Madison described the groups as

> …the ones who drive and the ones who go to all the parties and they're more, they're just really social. They're the ones who hang out with um, people who, they're not necessarily bad people, they're just, they're not good people. (laughter) They aren't the best people. (laughter) Um, let's see here. Someone who hypothetically may, ...they drink or smoke or things of that nature, yeah...so, they may hang out with those people and then you have the not so cool people. They're, a lot of times they're just overly childish, sometimes annoying. So it's one of those things like, oh, hey, I'd like to hang out with you but not that much cause sometimes you can get...it's just over the top. And then, us. I don't know, I don't know how to group us. Just in between, I guess just in between. Cause sometimes, I think it's because we can hang out with both, like if we wanted to, one of the cooler people wanted to do something, we could. If they had a party, we'd most likely get invited or vice versa, one of the not so cool people did, we would get invited. It's so weird (Madison Interview).

After several observation sessions, it was not difficult to distinguish the groups Madison spoke of within the classroom. Just as she had suggested, it was easy to recognize the cliques in Mrs. Dean's mathematics classroom. Those who Madison described as the "cool" kids sat closer to the rear of the classroom. Madison and her group sat in the front. See here our exchange:

> AJ: So, I've noticed that when...it kind of plays out in Mrs. Dean's class a little bit with the groups 'cause there's a definite...
>
> Madison: Oh...um hmmm
>
> AJ: ...um, how do I say...?
>
> Madison: It's kind of sectioned off, too. You can see it.
>
> AJ: Yeah, you can see it.
>
> Madison: The back and the front.
>
> AJ: Yes. Yes.
>
> Madison: That's basically what it is (Madison-Trent Interview).

She was very clear in stating her group of friends was more focused academically than the others as she was in line to be valedictorian and her other best friend slated for salutatorian. Nonetheless, the process of narrowing the selection of friends who fit her criteria was arduous and lengthy.

> MADISON: It's, it's difficult because I have, I have friends and then I have associates or so, or acquaintances. Now, I think this year, I think I've pretty much found who my niche is, like who I can really trust because over the years it's almost like every year after year, I hear something about someone that makes me think, oh man, I really can't trust you. But, it is what is, so now I really have found that group. I think I have about, it's probably about 5 of us that we can rely on each other really well and we each have strengths and weaknesses that we can use each other for so that works out pretty well. I know who my core friends are (Madison Interview).

Perception: Magnet program perpetuated the friendships and the selection process.

While Madison and Trent and Zora and Neil were friends as pairs before entering the Hillman

magnet program, the magnet program acted as a cocoon in which the friendships flourished. The overall consensus of the group was that they were all better for being in the magnet program with one another, travelling together over the course of the four years having the opportunity to take classes and ultimately solidifying great friendships built on support for each other. As confirmed by Dr. Soren, the magnet program itself was not spectacular nor was it exclusive in terms of course offerings including the AP Calculus class led by Mrs. Dean. "We're a math and science program by name only with our AP scores. They're weak. Look at the curriculum of study. It's not any different than a non-magnet student would take," Soren said (Soren Interview). Indeed, there were students in Mrs. Dean's class who were not in the magnet program but rather were on a track that eventually led them to be eligible for AP Calculus. In explanation, Dr. Soren offered the following:

> I think that the magnet program, as it stands today, accomplishes 2 things. One, it allows students to go into a cohort where they naturally have similar classes, similar experiences and I think build stronger friendships. The cohort, those kids have an identity and they have a home. They have a connection just like the football team but it's academic. That is a valuable experience. …what I'll say is that those kids have a perception that they're smarter and that, to me, is invaluable. If they think they're smart then we're gonna get a lot further than the kid that thinks they're not. So, I want those kids walking in with a confidence and a swagger because they were accepted into the magnet program and I think that that does a lot for a kid and their confidence as they matriculate through high school. So, it's good because they develop friendships. They're in a cohort that is just smaller and more focused and two, it definitely builds their confidence and for that, I think, we need to catch up the academic piece cause that's what's lacking a little bit which is why we're doing what we're doing (Soren Interview).

Mr. Turner and Trent summed it up when they both expressed the true value of the magnet program:

> MR. TURNER: I think it's more around the kids. I mean, the magnet program itself is, is, it's solid. I mean, I'll be quite frank, I mean it's not great. I mean, I mean, and that's the reason you've gone through some transitions. If you're looking at the magnet program essentially, I mean, let's keep it real. It's really just a hodge podge of courses that already exist. You call it a magnet program because you have those kids who have to enter but there's no true magnet track, okay. I mean, we know that and, and, but again I did allude

> to, it's really the kids that are there and so they created their own group. So from that sense, that's the real positive value, them being with themselves and part of it is a little bit about pride, you know. I think they're prideful of the fact they're magnet; whatever that means. And so that, that gives them an edge in terms of confidence and I think they strive a little bit more. I think it's kind of interesting. You could probably take, these kids are above average intelligence but there are a lot of kids who are above average intelligence who aren't in the program that could be and it's just the simple fact of, you know, not having effective parenting is what the issue is. So, I don't think the magnet program itself is, you know, it's just something specific about the curriculum. No. It's the fact that it's a magnet program and they're with each other (Turner Parent Interview).

> TRENT: Umm hmmm, I mean, I'm still in the Arts and Humanities program. I'm really involved in it, especially our Drama program. But, um, I don't have as much time. I've been in it every since the 9th grade. I've been, like, a really big player in the Arts and Humanities Drama program but, you know, magnet has just been the main focus. And, you know, going back if I would have to do it again, knowing what I know now, I would still choose magnet only because, you know, I do think it surrounded me with the people that I wanna be around, you know. If I didn't get anything out of this that's gonna help me, like, educational-wise in the future, which I think it is. You know, I think I did get some things that are gonna still help me educationally but if I didn't get anything out of that, you know, I've still got the people who I know are gonna be there for me if I need it. That's what I really enjoy about the program (Trent-Neil Interview).

Madison and Trent echoed the same sentiments in my joint interview with the two of them when asked what role, if any, magnet played in their friendship.

> MADISON: I think it helps that we do have that support system. The fact that we do travel with each other for the four years so we know each other well. We kind of just know how to act as magnet students and what's gonna go on and have the people ahead of us who we've spoken to them, like, past seniors and stuff, people who have graduated so I think that's helped a lot and yeah I think that's what helped the most. I think it's been a lot of us just working together and trying to keep it magnet.

> TRENT: Yeah. Magnet's become more of like a social bond more or less. That's what's sort of kept up afloat because, like, with all these changes, you know, we have been the same, you know. Our students and our peers in magnet have been the same. So, the people in magnet, you know, the social part of it, I think definitely has played a part in my success. I don't know, like, the administration as much anymore, you know, like after 10th grade, I don't, I don't, I didn't see it as, like, as hands on as it was anymore but you know, like, we have always been our support system, you know. The magnet grades above us have been a support system and the magnet class below us, you know, we've always been able to have that, you know, bond together. And that's what's gotten us through our years in school, so... (Student Group Interview).

Yet, how they selected their friends overrode the overall sense of unity within the magnet

program. Madison elaborated on what role the magnet program played in her friendship with Trent and how the groups she defined earlier play out in the classroom.

> MADISON: I think it [magnet] helped. Okay, so last time I explained to her how there's, like, three groups in magnet.
>
> AJ: Yes.
>
> TRENT: Oh, yeah.
>
> MADISON: That's what I said. Kinda, like, our group type of thing and then how it's kinda like, um, the not so cool kids but that's kinda how they're classified and then you have the kids who are classified as cool or whatever. So, because I think because we're in magnet which is one big group and then we're sectioned off into even smaller cliques. I think that helped a lot because it's kinda, even when you get into the class, you still say hey to everyone but you go and sit with another clique of people and if Trent's there, you're, like, oh okay. Talk to you. Yay (Madison-Trent Interview).

Perception: Not all friends are on par academically. Trent and Zora agreed that there were definite cliques within the magnet program and concurred with Madison's description of them; however, not all their friends fell within those categories nor were they all in the same circle of friends. On the contrary, Trent and Zora actually formed their friendship in drama class in preparation for a school production. He was attracted to her because he recognized her as someone with "free thought." They both acknowledged having friends who were not on par with them in terms of academic performance in mathematics nor in the same circle of magnet friends as Trent conceded,

> …you know, they are there but you know, they're just, they're not at the same, you know. Grade point average is a little lower but, you know, I think that's how it balances out. So, you know, I don't think… I try, I try to keep it diverse with the friends that I have because, you know, I think if I have friends who are just always over, like smarter than I am, I'm gonna get stressed out, you know. I don't wanna have friends who, you know, I'm just, I think try to have lower grade point averages than me because if I do then I feel as though that's just trying - I have really low self-esteem - I'm just trying to be like, oh, I'm better than you and I don't want someone who's just on my level because if they are

> then I'm not having the boost. So, I think that if I have everyone integrated, then they're helping me out in different arenas in getting there (Trent Interview).

It was important to Trent to have friends on different levels of the academic grade spectrum in mathematics. For instance, the friendships he maintained outside the magnet program were essential to him staying connected to his creative self. Further, his goal was to inspire others to be better students while being inspired by others he considered smarter than he. Maintaining those friendships was difficult, however as course scheduling for magnet students was such that their classes were primarily within the magnet curriculum. As Madison states: "That's hard. Staying friends with people who are, like, are not in magnet. That's hard." Trent chimed in, "They just, they have different goals" (Madison-Trent Interview).

Theme 2: Interpersonal relationships affect academic identity and behaviors

Contemporary research shows that the development of positive academic identities in adolescents may be borne of peer groups that support academic success (Azmitia & Cooper, 2001; Datnow & Cooper, 1997; Howard, 2003; Steinberg, Dornbusch, & Brown, 1992; Walker, 2006; Yonezawa, Wells, & Serna, 2002). The characters – particularly, Trent and Neil – were driven to succeed as a result of their relationships with Madison and Zora. The following participant stories depict the students' views of their academic identities and behaviors that had an effect on their overall success.

Perception: "Good peer pressure." As Trent alluded, his friendships made him a better student. Like Neil, he was intentional in surrounding himself with friends who would benefit him academically. This was not to imply they only depended on their friendships for academic success. All the characters expressed that they leaned on one another for much needed support; be it academic, social, or emotional. Nevertheless, there was friendly competition

amongst the group; continuously pushing to be on top as depicted here in a conversation between Neil and Zora:

> NEIL: I mean, academically, she's really supportive. I mean I try to compete with Zora. You know, Zora always getting better grades and stuff. You know... I try to compete with Zora but she don't know I'm competing with her but I still do compete with her.
>
> ZORA: I, I, know that...
>
> NEIL: Okay, she knows I'm competing with her. But it's like helping me academically. Like she's like, like, her success is helping me out. So, I wanna be more successful while she's still success[ful] (Zora-Neil Interview).

Likewise, Trent expressed similar thoughts about his friendship with Madison:

> Madison is, I, uh...She's so smart that I wanna be that smart, too. And um, I think that she, she's positive. And you know, it's not a person who's smart and just, they don't care about other people and talk about it. She's smart and she's willing to help. You know, if I need Madison to do anything, you know, I can call her. And, so she, her being so smart, one, makes me want to be on that level too. I'm your friend, I don't...this is, I think, good competition. Not the push out of the way competition. You know, I do want to be as smart as you. Not, I'm not trying to push you but I do wanna be on your level. So, you know, it's made me work harder towards getting to where she is and her just being able to support me, like, when I need her help. It's helped as well (Trent Interview).

Trent felt pressure to achieve as a result of his friendship with Madison but hurried to express he felt it was "good peer pressure" that pushed him to strive to attain success comparable to hers.

> Madison has been achieving so well, when you're with friends and they achieve well, you wanna achieve well. Cause you don't wanna be that friend who is not achieving well and I guess it's peer pressure but it's a good peer pressure because it makes you wanna do well. And so, you know, they just make me wanna succeed (Trent Interview).

Theme 3: Interpersonal Engagement

Upon meeting the four characters of my study, they each identified another member of the group as his or her best friend while indicating they were all friends collectively as well. Madison and Trent were best friends; likewise, were Zora and Neil. To give greater context to how they interacted as friends in the classroom, I delved deeper into how they became best

friends, what friendship meant to them and how they engaged in their friendships. The following narratives reveal the socio-emotional factors and perceptions that emerged as a result.

Socio-emotional factor: "Accepting." Madison and Trent both attended the feeder schools for Hillman, Mason Elementary and Frost Middle schools. They met in fourth grade but did not cultivate a friendship until middle school.

> I didn't hang out with Trent. He was in TAG [Talented and Gifted] with me but Trent was always, he always seemed like this weird kid to me so I did not hang out with him. Ummm, I was trying to be popular at that time and I was like, everybody else said, Oh, Trent's weird. So, I was like, "Yeah, Trent is weird." Then middle school, I started talking to him more because we had the same French class and our French class was made up of about 10 kids and my closest friend in there, her name was N, so we would always sit at the same table and Trent started to sit with us. And we started talking and I was like, okay, he seems pretty cool but still nothing really close. Then we got to Hillman and all my friends were up North so I kind of ran out of friends (Madison-Trent Interview).

Most of the study characters' friends from middle school either moved away or chose to attend magnet programs at high schools in North Shelby County. The summer leading up to ninth grade cemented Madison and Trent's friendship as they attended a magnet program camp in preparation for the new school year. When asked what their friendship meant to him, Trent expressed:

> I know I'm really weird and so, you know, you don't find a lot of friends, especially in high school, who are willing to be your friend, especially when you're absolutely crazy and coo-coo. Whether it's thought process or really just the things you do. You know, Madison, she accepts that, like, she doesn't care. Like I said before, she's gonna tell me, you know, how she feels about it but in the end she's really there. She has my back (Madison-Trent Interview).

Perception: "Really honest." Trent and Neil both described Madison as being "really honest," however this characteristic not only a depiction of Madison but was defined as the foundation of their friendship. In response to how the friendship survived four years of high school, Madison shared:

> I feel like honesty...there's no point in lying. Lying is...there's just no point for it. So, I think being honest helps a lot cause we don't have to go through the whole, the white lies thing. Awww..I wonder if she's telling the truth. I wonder if she feels this way. Just being straight forward - that keeps the bond. That keeps our bond really strong. Cause we know exactly how we feel and then I guess through that, we kind of learned about each other. Like, oh, I know how you feel about that. Like, we can even come out of class...Oh, did you see what she said? Oh, I knew you were gonna say something about that. [laughter] Cause we're honest with each other and we kind of start to learn how each other think, how we think. It's really funny.
>
> TRENT: Um hmmm... Um, yeah, it's, it's, you've...we've learned, like, over the years I just think it's just become so, like, you said, we know when, like, when something happens in class, as soon as we come out of class, we know what we're about to say about it. There's no doubt about it because we do know how each other think. And I think, like, because of that it, we understand when we need to communicate with each other and like, when there's time to talk. … And so, I think, you know, our friendship, like, has remained really strong. Like, I've seen a lot of people fall off that I'm friends with, really, it's happened over the years. And, like, would I wish, would I love to be friends with them, yeah, but, you know, you're friends with people for reasons and you stay friends with people for reasons and I think that Madison is one that I'm friends with for really big reasons and I think she's gonna make, be with me as a friend for a long time to be honest (Madison-Trent Interview).

Perception: Critical. As a group, it was not uncommon for them to share their grades with one another and to offer one another strategies to improve scores. When the first nine-week grades were distributed, Trent commented:

> We got our progress reports. And we were just, we were just really honest with each other. We tell each other when we need to do better. We laugh and joke about it but uh, you know, we're not doing it to hurt each other. We're doing it to, you know, provide criticism, constructive criticism because, you know, you're a friend and you can't tell your friend if they are doing something wrong. They need to do better. What type of friend, like really, are you? You don't want them just to sink and you didn't tell them that you were sinking. You know, I'm gonna tell you you're sinking and let's try to bring you back up (Trent Interview).

Socio-emotional factor: Caring. Because the characters are forthcoming with one another, they were not hesitant to admonish a member of the group for poor performance. In the joint interview with Madison and Trent, the discussion turned to Trent and his struggles in AP

Calculus and the fact that he did not study. See the exchange here as Madison expresses her dismay:

AJ: Right, cause last we talked, you don't study.

TRENT: Yep, uh, that has changed.

MADISON: Trent, Trent...[exasperated]

TRENT: That, I don't study. Madison, you knew this.

MADISON: I know you don't. I just hate hearing it.

TRENT: I have had to study recently for Mrs. Dean's class. I really have. And that's the one thing, that is my plan - to study a lot. Um, that Trent in the beginning that did not study that cannot work. I've learned that does not work for Calculus.

MADISON: Not for college either.

TRENT: Yeah, well you know what, I cannot study for Lit.

MADISON: I mean Lit...,

TRENT: Yeah, true.

MADISON: ...he tells us we don't have to study because you don't know what the content is.

TRENT: Right. I know, Madison. You don't have to beat me down.

MADISON: It's okay.

AJ: So, it sounds like you guys have had this conversation before?

TRENT: We have.

MADISON: ummm hmmm

TRENT: We have. We have. Multiple times.

MADISON: Yes. I believe in studying.

TRENT: She does. She really does and, uh, I listen to her. I do. I've studied before especially after she told me, Trent you need to study. And I've done well. You know, it usually happens around this point. I've never been in this position. [laughter] Like, it's never, I've never....wait...

AJ: At the end of the semester?

TRENT: I've never been in this position at the end of the semester. I've usually had like a really, really high B that I want to get to an A. And so, Madison's advice, Trent you have to study. And so, you know, I study and I'll do well on the test, do well on the rest of the quizzes. Boom, my grade's an A. This time, it is different. We're in a complete...

MADISON: The class is hard, though, really.

TRENT: I mean, yeah...

MADISON: Calculus is hard.

TRENT: But, and that's why I need to study. So, that, um, I realize, you know, if I study math, if I study Calculus, I can get it (Madison-Trent).

Socio-emotional Factor: Belief in others. While critical and admonishing at times, they were also very encouraging. On several occasions, Neil expressed his belief in Zora's capabilities when Zora felt doubtful. In contrast, Zora sometimes felt overshadowed by Neil and other friends but overall felt they were supportive of her emotionally and academically. In the following excerpts, Neil shares his thoughts on Zora's ability to get into Massachusetts Institute of Technology. Following are Zora's feelings of being overshadowed. I began by asking if she felt her friends provided a safe zone that allowed her to be comfortable and followed up with whether she shared her feelings with Neil.

NEIL: But like, I know, like, I remember I tried to influence Zora to apply to MIT. She was like, no I can't get in there. I was like, really, Zora? If I can get in there, you can get in there. I was like, you're just as good and probably better than me with academics and stuff. You think you can't get in there? Really? I don't know, but... (Neil Interview).

Socio-emotional Factor: "Over-shadowed" vs. "Shining." Zora expressed feeling "over-shadowed" by her friends but conceded that ultimately, she did not consider their treatment of her to be intentional. However, her idea of friendship differed from that of the other characters. Other than Neil, there was hardly anyone she considered a close friend throughout her high school career. Friendship to her depended on how helpful you could be to her in class. Rarely did her friendships extend beyond the classroom. The following depiction speaks to her involvement in clubs and school activities and her desire for recognition.

> AJ: Do you think your friends provide a buffer for you in terms of um, the way you feel? Do you think your friends allow you to be who you are?
>
> ZORA: I think they do. At times, I feel as though... they don't hinder me but they like kind of overshadow me. Staying with the concept of just shining, it took me so long to try to shine that they just always overshadow. So me trying to like shine a little bit more, they still can't believe it so they're still trying to get used to it. Like, oh wait, she can shine now? It's okay, it's not that strong. So, it's just like, they've always been my friends but in a way, they're not used to me being above them. So, I've always just been kind of over them and when I try to step, they're like, Oh, Zora, I don't understand. But, they're some friends who have always been there for me and they've always just encouraged me to be the best that I can be.
>
> AJ: How about Neil? Do you share this with Neil?
>
> ZORA: I share it sometimes. Even with Neil, he's always been that kind of person who kind of is like it doesn't matter how many things, cause I have a lot of things above him as far as like academic-wise. I've always been above some people, so above him. As far as like leadership roles, he's always been having more leadership roles than me and so he would kinda, tells at me, I'm like Well, you know, I'm trying to work at it. He's like, Oh, Zora, you're a leader? I'm like, Yeah, I'm a leader. So, like, it's kinda the stuff that I wish to share with my friends but I never got a chance to. So, my friends understand me, but internally, they kinda don't. But, he, like over the past 6 years, I have opened myself up to him a couple of times so he understands the way I feel. It's just at times he still is not used to not overshadowing me and just letting me be me.
>
> AJ: Do you think...do you think your friends overshadow you consciously or subconsciously?
>
> ZORA: Subconsciously. I don't think that, um, they really do mean it, honestly. I think they just, they're just not used to it. But they're still my friends and they still support me

> in several ways. They just don't really mean to step on my hopes and dreams. They just, it's fine...really (Zora Interview).

Perception: "Better off as friends." Zora and Neil met as seventh graders at Vereen Middle School. "We was forced into friendship [sic]," Zora said (Zora-Neil Interview). Neil's roommate on the trip was attracted to Zora's roommate. After many phone calls between the rooms, Neil and Zora eventually spoke to one another and a friendship began. Actually, a courtship began. After nine months of dating, the pair decided they were better off as friends rather than in a relationship. "It was just very…it was like, uh, laid back. It was like, oh, we're best friends," Zora said of the transition (Zora-Neil Interview).

> We dated for 9 months but throughout the relationship, even when it ended, I noticed, I was like throughout the relationship it wasn't really a relationship. It was a friendship. It was a best friendship. And so we just decided to keep as just best friends. And that's all the relationship was. We just put a label on it but we've always been best friends. So, yeah. That's how we met (Zora Interview).

Neither Zora nor Neil desired to attend the high school for which they were zoned, choosing instead to apply for Hillman's math and science magnet program. Not unlike Madison and Trent, not many students from Vereen applied to Hillman's magnet program. As a result, Zora and Neil's friendship grew as they awoke in the wee hours each morning to take the long ride to Hillman on the exclusive magnet bus; talking to one another for much of the hour it took to get to school. The magnet bus was a form of transportation that was only available to magnet students but picked up students along a route that was much longer than the typical school bus designated to collect children from specific neighborhoods. Thus, the magnet bus was dispatched much earlier in the morning and the ride could last up to an hour and a half. Magnet students had a choice of either riding the magnet bus or the general population bus. However, non-magnet students were not allowed to board the magnet bus.

Perception: "He's just true." Much like Madison's quest to find good friends, Zora experienced the wax and wane of friendship; though, with Neil, she found a lasting relationship.

> ZORA: As a friend...he's a good friend. We've been best friends for a long time like he said before. And, he's like, cause with some people I don't trust but I could trust him with anything. And let's see...I'm trying to see what other friends...and like as far as work goes, I know that he'll do the work so I like, to like on partner up with him, projects and stuff. So, that's good. Um, I'm trying to see what else. Um, he's just true. Nothing like, we don't fall off at any time. We're always just really close. We, like, communicate with each other over summer when we can or like when we come back from school, it's like we didn't miss anything about each other, so...Um, it's cool.

Theme 4: Pursuit of emotionally gratifying interactions

The most prominent socio-emotional factor amongst the characters and their thoughts on the meaning of friendship was support. Over the course of eight interviews with the students and one interview with the Turners, some variation of the word "support" was mentioned 39 times. These instances of support were not isolated to academic support. The friends have supported one another through negative experiences ranging from being taunted for being high achievers to being ridiculed for entering and winning the Ms. Magnet contest. They have offered support on late nights of studying by calling to wake a friend from a short nap to continue studying for a test the next day. Support has come in the form of pep talks when grades were less than desirable or early morning study sessions before school or in the midst of classroom lectures when concepts were not very clear. Of the friendships Madison had developed throughout her years in high school, she summed it up saying, "It's really about support, I think. In my opinion, our friendship is about being supportive and having fun" (Madison-Trent Interview).

Socio-emotional factor: Supportive. The characters sought interactions that met their academic and emotional needs and summed up those relationships mostly as being supportive and encouraging of one another. It was important to them that they were allowed a space within

their friendships to be genuine. The characters shared the ways in which they found their friends to be supportive:

> ZORA: My friends are very supportive and after um, after a while, like over the years I tend to notice, like, that some friends will grow apart because some people don't understand that like, if I have a friend, like, oh, you know, they're gonna be my friend forever and sometimes that doesn't always work out. But as far as like the stable friends and the friends who's always had my back, they've always been there for me and I really thank them. Cause they encourage me in so many ways possible and they never let me down. And even when I feel sad, they always have a way...even when I say, like, no you can't solve the problem. They always find a way to solve it. So, they've been really good. They've been my role models, honestly (Zora Interview).

> MADISON: Um, to me our friendship is, it's about support. Being there for one another cause he's definitely supportive. All my friends, all my close friends are really supportive. And he's one of those friends that you know you can talk to him about anything. I can always be myself around him. Yeah, he's always there, yeah. He's a really good friend. I never, if I have something to say or have a problem, he'll be there for advice. Need help with anything, he'll be there even if he can't help me. Even if it's work and it's a problem that we both don't understand. He will try (Madison-Trent Interview).

> MADISON: Definitely, academically and socially. Even if it's a social problem, I know to go, Oh my gosh Trent, guess what happened? And he'll sit there and listen and give me advice. He's a good listener. I'll give him that. Cause sometimes I can talk a lot. But sometimes he can talk a lot so it balances out (Madison-Trent Interview).

> ZORA: With Trent and Madison, I think they will support, I think Madison will support me the most. She's like what, that's great! Trent would be about the same but he would put it in like a competitive manner. So, if I say like, yeah like a 102 in the class. Oh, I got a 103. (laughter) Um, so, kinda like that. And Neil would just, after I tell him one grade, he would be like, Zora, get out of here. Nobody cares about your grades. But Madison would really be supportive about that. She'd be like, what? God, that's amazing. So, yeah, it's like that (Zora Interview).

> MADISON: I think we're really close. Um, I think we're just very close, very supportive. We like to have fun. Uh, I feel comfortable with them. There's never a time where I'm sitting with them, it's like, ohhh...I feel like I can be myself. There's never a time where I'm just like, Oh, I need to make sure I act this way cause she wouldn't like me if I was like this. I can be myself (Madison Interview).

While they found their friends to be supportive, Madison noted instances in class when her peers were not always appreciative of her efforts.

> MADISON: A lot of times I think it's environment. Especially, especially in our culture. A lot of times we put each other down. Like, a lot, when someone tries to do something. Like, even if you're in a class and someone has the right answer. Someone'll be like, Ugh, (smacks lips), why does she have that? We're not supportive of each other and I think that's one of the biggest things. You have to be supportive of each other (Madison Interview).

Socio-emotional factor: Pressured. Although the magnet program seemed to be a safe-haven where high achievers were welcomed to hone their academic skills, each participant reported negative experiences during classroom interactions and within the magnet program in general. The characters felt pressure to continuously live up to their personas as high achieving students. As the competition heightened for placement in the top 25 and valedictorian, Madison and Trent recounted instances of deriding comments made by their magnet peers.

> TRENT: Yeah...I think it's also, like, okay, I've always had, like, this thing, um, even when I was younger, like, you know, I, I think, I think I like to...[sigh] I can't even believe I'm saying this, but, um, sometimes it is a peer pressure. Like, when you're smart and people expect you to be smart,...
>
> MADISON: Ummm humph!
>
> TRENT: ...you know, you don't want to show not being smart. Like, and I guess, you know, it's just a stigma, Trent's smart, you know. For you, like, to not do, do something wrong, you know, people look at you, like, Oh wow!
>
> MADISON: You got that wrong?!
>
> TRENT: You got that wrong. So, you know, like, you know, I think that's, like, that's probably the root of the problem. I just don't, I hate when people look at me, like, you know, you can't do something wrong, even though I know it's okay, I just don't wanna hear it. Like, you know, I don't wanna hear that. I don't want you hearing, I already know I did something wrong. It hurts me. [laughter] But I don't want to hear you say it too.
>
> MADISON: Um, I kind of gave up on that whole thing about listening to other people say, Oh, she didn't understand that. Especially because I'm the projected valedictorian and hearing people, [laughter] and it's even worse cause people say, Oh, if the

> valedictorian don't it, then we don't need to know it either. And it's like, I'm human. I make mistakes and that doesn't mean anything. But I kind of just, I don't care anymore about that. I've, I just brush it off my shoulders. Like, people say, before it was, like, ahhh, man, I don't wanna ask questions because of that reason, too, cause it might be a bad question or a dumb question or everybody might have heard it before, so before I was, like, Oh, maybe I shouldn't ask that many questions cause I don't wanna hear everyone else's reaction but now it's kinda like, I need to know this. I need to learn it so whether or not you've heard it or not, I'm still gonna ask the question.

Socio-emotional factor: Fun-loving. Because of the stresses of school, the characters recognized the need for an outlet and looked to one another for entertainment. Zora credited Neil with helping her become more social and gain new friends trusting that if they met Neil's requirements for friendship, they would be good for her as well. Neil often planned movie dates for their group and socialization afterward at a local eatery. "In my opinion, our friendship is about being supportive and having fun,"

Madison exclaimed as shared that she often hosted parties or hang-out sessions at her home for her friends to relax on the weekend:

> Usually, I like to host stuff at my house. So, like, I have Halloween parties. I'm having a Christmas party just so that we can take a break and have fun cause we deserve fun. I feel like we deserve fun and I like hanging out with my friends. I have, I have a really good group of friends.

Neil concurred with Madison commenting that their high school years would not have been the same had it not been for his friendships. His relationship with Zora was particularly meaningful.

> NEIL: It's been really important. I mean, if I didn't have Zora there I think, like, high school would have been kind of boring. Like, everything that happened in high school, Zora's been involved in it or everything that I've, like, seen or something that's happened during high school, she's been involved in it. Like, Zora, like, say if something happened to Zora, I'll be the most broke, crying person in the world. I'd probably have a heart attack or something. I mean, like, she makes it fun. Like, she thinks she's shy. I don't think she's shy. She thinks she's shy but she's not shy (Zora-Neil Interview).

Theme 5: Satisfying emotional needs through social networks

The characters were affiliated with several groups and clubs at Hillman, some of which

they participated in together. The bond of friendship they enjoyed extended to these organizations through common interests; thereby, strengthening the relationships as these were opportunities to learn more about one another than what one would in the classroom.

Socio-emotional factor: Sisterly connections. Madison and Zora were both members of the Women of Hillman, a club that promoted sisterhood by welcoming girls from different backgrounds and sponsoring activities that encouraged understanding while eschewing cliques and discordant behaviors. Prior to joining Women of Hillman, neither Madison nor Zora knew much about the other but developed a friendship as a result of the relationship-building strategies of the club advisor. While Zora desired to be, she was not included in Madison's close circle of friends. Yet, the interactions within the club led to a good working relationship for them in the classroom.

> MADISON: I'm the president of Women of Hillman, which is a community service and sisterhood organization. We do a lot of bonding exercises. We just kind of get, we try to get young ladies across the school from different cliques and bring them together cause, of course, you stay with your core friends but you do need to speak to other people and just get out there so, we kind of do that and just develop a sisterhood. It's very weird how it works out because you see these people in the hallways and you're just like, oh, hey. But then when you finally join this organization together, you're becoming sisters and it's just like, wow, I would've never expected to bond this way with her (Madison Interview).

> ZORA: Um, my closest friend is, like, along the group, my closest friend would have to be Neil. I'm closest with Madison because she's in my organizations and I've always been close with her and Trent too, just not as close as I would have hoped but we still talk and we're still like really cool. And we still text each other. But, Neil, I think I'm just the closest with him (Zora Interview).

Theme 6: Effective collaborative learning

Collaborative learning within the AP Calculus class was been found to be useful for the characters of this study. Gaining insight from peers during problem-solving activities or being able to justify a solution has been shown to be effective when students are working toward

comprehension of mathematics concepts (Hiebert et al., 1997; National Council of Teachers of Mathematics, 2000; Walker, 2006; Webb & Mastergeorge, 2003).

Mrs. Dean was an advocate for group work. As a result, she generally arranged the desks in groups of two or three. So meticulous was Dean about seating, she drew green chalk lines on her floor to ensure the most efficient use of space for groups of three or more. At times the desks faced the white board. On other days, they faced the promethean board or her desk which was adjacent to the promethean board. The direction of the desks was dependent on how the lesson for the day was primarily being facilitated. It was very rare that the desks were in the same position for more than two consecutive days. In response to why the desks were frequently grouped she replied:

> Because I think there's something to be gained for them to be able to verbalize what's taking place which is one of the pillars in Calculus is that they have to be able to verbally communicate Calculus. They have to be able to express it graphically, numerically, and verbally is key because on those free response questions, they have to be able to explain and justify why it is what it is so allowing them to talk and discuss it, I think helps them process it and helps them work on that part of it (Dean Interview).

Most days, Trent and Neil sat together while Zora and Madison each sat with another student. However, if the desks were in groups of three, Zora sat with Trent and Neil. I was puzzled as to why Madison never sat with either of the three until she explained Mrs. Dean initially assigned seats at the beginning of the semester. It was pure coincidence that Trent and Neil were placed next to one another. When the seating assignments were relaxed, Madison chose to keep her original seat placement. Though if the desks were arranged to accommodate more than three and the students were given their choice, as Neil stated, the four of them naturally gravitated toward each other to form a group. A typical seating arrangement for the four of them included Trent, Neil and Zora sitting together on the first row closest to the promethean board and Madison sitting with two other students on the second row closer to the

middle of the white board, one of which included a girl from the group she indicated as her official circle of friends.

Perception: Collegial connections. The class sessions were collaborative with students helping one another at the board and not hesitant to leave their desks to assist someone at another's. Even though the group generally chose not to study together outside of class, their classroom interactions were helpful. That is evident here in my exchange with Madison:

> AJ: So, if you're solving a problem or particularly um...it wasn't, was it yesterday? No, it was day before yesterday when you guys were at the board. You were working the problems. Kids were back and forth. Does that help you?
>
> MADISON: Yes. I love when we do things like that because I feel like it's flexible and I kinda like it when you can just learn on your own, per se where Mrs. Dean is there to help you if everyone is stuck. But if someone is doing a problem and they completely get it and someone can explain to me, that's fine. If I can explain it to other people, again, that helps me process things especially when I get on the quiz so I like that. It was really laid back and chill. It wasn't strict at all and that's what I like about the class (Madison Interview).

Zora agreed saying that at times they would work alone and compare answers when the work had been completed:

> ZORA: I think yeah, if she just kind of tells us like okay just do the problems, we kind of work it separately but at the same time when we're done we're like, Oh, did you get this answer? And then if our answers match up, it's like, yeah, we're good in this and if it doesn't, we're like, I think you were wrong. And so we have to go back, and we're just like, Oh, yeah, I messed up the steps. But, um, we just help each other just with all the problems especially in Calculus. We really do need to help each other, so, that's what we do.
>
> AJ: Do you think that helps you study? The interactions that you have in class, does that help you with studying at home?
>
> ZORA: Um, hmmm because um there's some times when like I would, like, if I do a one equation and the it's the same equation like it's used in the same formula and I would think that I'm right but then I noticed that like every time when I do the formula I'm missing out on another variable or I'm missing out on a number. So, if I'm like interacting with someone who doesn't get the same answer as me or needs help and they notice something, like, Zora, how did you get that? You're missing out on something.

> I'm like, Oh my gosh. I would've been studying the wrong thing if I would've never talked to you about it so, yeah, it does help me with my study methods (Zora Interview).

Perception: "We hash it out." Because Trent and Neil were in the same math class since ninth grade, they always sat together and had developed a special rapport.

> TRENT: Well, Neil, you know, honestly being a guy, you know, we, we...It's, I think, I really do, I think it's like a dominant thing. I think there's something that guys have. You know, we, we talk, you know we like to hash it out sometimes, you know, who's right. And you know Madison and Zora, they're like really focused so, you know, even though we're still friends, me and Neil, being guys, we just like to converse, you know, about it and figure out what we're doing. And they're just, they like to sit back and you know, figure it out on their own (Trent Interview).

> NEIL: Um hmmm. Like, Trent, if he don't get something, I'll probably get it. If I don't get something, he'll get it. I can ask him. Or I might just annoy Zora and make her come over here and show me how to do it. Like, I'll help him out, he'll help me out (Neil Interview).

Perception: Resourceful. Not only were the interactions in class useful, the students also made a habit of sharing resources. Mrs. Dean was very technologically savvy, but the students even more so. Often, they would utilize the internet to further explain concepts introduced in class such as YouTube, finding teachers facilitating specialized objectives and addressing the need of the students' particular learning styles. Essentially, the students were using the internet to cater to their specific need and they were sharing the wealth via text, email, phone conversations and sometimes Instagram.

> TRENT: Um, you know, we find, most of the things I try to find things that I can use and then we find things. We do, all of us, and it's just everyone. Especially those in the magnet program and AP programs. We try to find our own, uh tools that fit better with us because, you know, adults, you know, I know that they're trying to help but a lot times the tools we get uh don't really work for us as teenagers so we try to find things amongst ourselves. And then once we find it, we shoot it each other and we use it that to, you know, study, guess.

Perception: "We all we got." The characters of my study were synergetic with one another and helpful with others when working at the board and in some group formations. In

contrast, when assigned to groups not of their choosing Madison and Zora withdrew and became almost non-communicative. Near the end of the semester, Mrs. Dean assigned each of them to different groups to complete a packet. Although Madison and Zora were both in groups of three, they each worked quietly and kept to themselves only speaking when spoken to or asked a question. All collaborative efforts came to a halt (Observation 18). During our interview sessions, I asked about that particular class session and the effort put forth in the group. Following is what Zora haltingly said and Neil's response:

> ZORA: It's always like...if I get into a group...and I'm probably, cause usually, like, they interact with one another and they like, ohhh, you know, I'm stuck on this question and they ask each other but they don't ask me. Unless they ask me, then I'll tell them but usually, like, when they're on question 3 I'm already on question 8. I just don't wanna tell them because I just, it's just something that...I don't know. Shyness takes over but I know what to do but I don't wanna give them the wrong thing and then they'll be like, oh, well, then Zora and that...since I don't know them I would feel like more... It's just a long, it's a long process. I just kind of just do my own thing.
>
> NEIL: I actually thought about doing that. I was like I might as well just go ahead but I was like, I can't leave them behind.
>
> ZORA: aaannnhhhh
>
> NEIL: I mean, like, we...we...W-A-W-G, we all we got.
>
> [laughter]
>
> NEIL: That's why we gotta stick together.
>
> ZORA: Okay.
>
> NEIL: And pull through. I mean, seriously, like, I mean if they don't get it you at least try to help 'em (Zora-Neil Interview).

Just as the characters realized support was critical to their friendships, they were also very perceptive of their needs as students in the classroom. In their quest to understand the material, they were prepared to fill in any gaps for one another left by teachers; specifically Ms. Strong, their Pre-Calculus teacher in 11th grade. Intrigued by Neil's comment "WAWG," I asked

him to elaborate. In the same way the students had a variation of classes together, they also had several teachers more than once for different classes. They had all had Mrs. Dean and Ms. Strong in previous classes. Neil's experience with Ms. Strong in an earlier class alerted him to the fact that he might not get the help he needed from her to be successful in the class. Neil recounts that experience here:

> AJ: So, let's go back to Ms. Strong's class Junior year when Neil mentioned in your interview with Zora, We All We Got, and you and Trent were in this class together. So, when did you realize that, Oh, wait a minute, we not gon' make it through this class because Ms. Strong's not helping us and the best way to get through is with my friend that I sit next to.
>
> Neil: 10th grade year.
>
> AJ: Before Ms. Strong's class?
>
> Neil: We took her for zero period and she was no type of help in zero period. Like, that was when we were supposed to learn logarithms. I did not learn logarithms then. So, I realized, Oh, she is no type of help. When it came to our 11th grade year, I just used everybody else and never actually asked her for anything (Trent-Neil Interview).

Socio-emotional factor: Humiliated. Ms. Strong actually had an "Ask Three People" policy, meaning the students had to ask three peers before approaching her for assistance of any type. Students who dared did so at their own peril. Ms. Strong was notorious for sending students away embarrassed and humiliated, questioning what and why the students did not understand and whether the students had read the material or done the homework.

> NEIL: Like even if you didn't understand it, she'll be like, oh ask three people and then you ask me.
>
> MADISON: Yeah, I'll just look it up. It wasn't worth it.
>
> ZORA: Cause I'm probably just not seeing something and I don't want her to yell at me or something.
>
> NEIL: She'd be like, ask three people before she, you ask her. And then, like, if you still don't understand, she'll still get mad at you after you asked three people.

ZORA: Did you ask three people? Yes...

TRENT: And then she would do that little high thing. What don't you get?

ZORA: Everything, Ms. Strong.

[laughter]

ZORA: It's so easy. What don't you get (Student Group Interview)?

Socio-emotional factor: Determined. Students could choose their own groups in Ms. Strong's class but once ensconced in a group, members were not allowed to seek help outside their group; which ultimately led to covert operations to get questions answered from groups who seemed to have a handle on the material presented during any given class session.

NEIL: It's just like sometimes, she would not let you go outside of your group.

AJ: Really? So, whoever you grouped up with, you were stuck with.

NEIL: Yeah, you had to ask them. And, well, you couldn't go outside your group and they didn't understand it, well, you're SOL.

TRENT: Sometimes, you just had to be rebellious.

NEIL: Or you just to have to have a book.

TRENT: You had to go outside of your group sometimes. You know, just sneak outside to the other group. I mean, sometimes, you really did. Like, you know, you were like, okay, look, you're not getting it. I'm not getting it. They got it. Let's go see what they're doing. And then you come back and tell your group and we're all getting it.

NEIL: Next thing you know, the entire class is getting it in the next five minutes.

TRENT: That's right. We had a system.

Theme 7: Illusion of control

Before entering Mrs. Dean's class, each participant reported having rather successful careers in mathematics indicating that math up to that point had been relatively easy with the exception of difficulties faced in Pre-Calculus; those were attributed more toward how the class

was taught rather than the material itself. As I began observations in Mrs. Dean's class, it seemed as if the students had a good grasp on the concepts as they responded to inquiries posed by Mrs. Dean and approached the board to work problems.

Socio-emotional factor: Stressed. During observations, there was every indication that all the characters were doing well. However, as I began to conduct individual interviews with the students and subsequently moved into interviews with the pairs of best friends, it soon became clear that Neil and Trent were struggling in the class. The stress of his performance in the class prompted Trent to request a conference with his mother and Mrs. Dean to discuss what he could do to improve his grade with the take-away being Trent did a poor job of asking for help.

> TRENT: It troubled myself for me to be in this position because I've never had a conference with a teacher, never, never been in this position before. Never thought I would have to have one. But, uh, it got to the point, I told my mom, I was, like, I was really stressed out. I was really, I went home...I'm not trying to sound, like, you know, I used to, like, I just couldn't take it. I would go in my room and I would sit there and I was just so stressed because of Calculus. It wasn't Physics. It was just really Calculus and I would try to meditate. And so I ended up, I sent an email to Mrs. Dean and, like, my mom was, like, she was actually in the car. She was, like, what are you doing sending an email this, early this morning? And I told her, I was, you know, I had had the conversation about Calculus with her before, you know, that it was, you know, a challenge but I don't think, you know, I never told her how much of a challenge it really had gotten to. And, like, you know, I've always been able to, you know, Trent, snap it up, you know, half semester, end of the half semester, I might have trouble at one point. Then in the end, I get it. You know, it clicks. In Calculus, it really wasn't clicking for me, you know, it just wasn't clicking at all. And so, you know, I just told my mom, I just, I would really appreciate it if, like, you know, you, Mrs. Dean and I can just have a conversation together to see, you know, what I can do because at that point, I just, I don't, I guess I don't, it goes back to the thing, I don't like asking teachers for things because I, like, Mrs. Dean, I don't know. Were you in the class the other day when she was, like, like, like when she gave me the paper and she was, like, what did I tell you about, what did we have the conversation about, you know, you have to speak up, like, I don't if you were in the class that day. It was a whole thing about, she was, like, Trent, you gotta speak up (Madison-Trent Interview).

Perception: Prior math experiences falsely informed Calculus performance. As it turned out at the semester's end, both Neil and Trent were failing AP Calculus. Not asking for help was a factor in their poor performances but past experiences in math classes and a lack of consciousness hindered them more. Everything from not studying to not seeking assistance to not completing the packets to not reading the syllabus was a result of practices in math classes leading up to Calculus. Neil and Trent had every math class together from 9th to 12th grade. Because of this, they developed a system to pass the classes that had proven to work for them until AP Calculus. In previous classes, homework was either not taken for a grade or was graded for completion but not accuracy and did not affect the final grade much overall. This proved to be fatal in Mrs. Dean's class.

> TRENT: Originally, I wasn't concerned at all. Like, I thought, I really thought it would be like every other class, you know. Trent, you would maybe not do homework. Do well on the tests and quizzes. Somehow when I get that report card, it miraculously was a B or an A. Like, it's happened so many times (Trent-Neil Interview).

In the initial interviews with Neil and Trent, they both maintained they did not study. "It's hard for me to study because every time I study, I do, I don't do too well," said Trent (Trent Interview). Not only did they not study; they were also not completing the packets. It had been their practice for so long where they would not study or not do homework and still pass the class; squeaking by at the end of the semester with high test and final exam scores, pulling high B's up to low or solid A's. Several things worked against them in AP Calculus whereas the former system they had in place was not beneficial. First, they failed to read the syllabus which outlined classwork (i.e., the packets) as 20 percent of their grade. A portion of the 20 percent was for completion but Dean would also choose 10 problems from the packets to assess as a quiz grade. Neil and Trent understood what was being discussed in class but found that there were more advanced concepts on the tests that were not familiar to them. These concepts were covered on

the packets that they failed to complete. There were opportunities for recovery with every test administered as well. If the student failed a quiz but passed that same content on the subsequent exam, the quiz grade would then be replaced by the passing test grade for that section. There were class re-takes as well when the class as a whole did poorly on the exams.

Adding to this cacophony of failure was the fact that Neil and Trent did not have seminar with Mrs. Dean, but with Ms. Strong. Several of Mrs. Dean's students were placed in Ms. Strong's seminar due to classroom overflow including Zora. Seminar was scheduled on C days and was meant to be a period to reinforce what was taught on A and B days. The packets were largely completed and sometimes distributed in Mrs. Dean's seminar. However Ms. Strong taught AP Calculus BC, an extension of AP Calculus AB, which meant her class was ahead of Mrs. Dean's covering more advanced concepts. Thus, any material handed out in Ms. Strong's class was not in sync with what Mrs. Dean was teaching. There was a definite disconnect. When I questioned whether seminar with Mrs. Dean would have mattered, the boys had this to say:

> AJ: But do think that would have made a difference if you had been in Mrs. Dean's seminar class from the beginning, would that have made a difference?
>
> NEIL: Yeah. I actually would've gotten work done in there.
>
> TRENT: Like, I know that they would get, they would get packets that, you know, would eventually be due in our class too. But, like, we wouldn't get those packets till the next day because, you know, they would get them in seminar and then we wouldn't get them till we went to her class. So, you know, we had, it was, like, a, thrown for a loop and then, like, it was sometimes, you know, they would have assignments and there would be the due date, you know, that we realized, you know, that were due and, you know, we didn't know about those assignments anyway and then we would have to ask for them. Then we'd have to do those too, because, you know, they were assignments they got in seminar.
>
> AJ: I see.

> NEIL: Or they would, like, get a packet and she'll be referencing that packet and we wouldn't know what she was talking about because we never got that packet 'cause they got it in seminar. We just, like, oh, we got whatever Ms. Strong gave us (Trent-Neil Interview).

Nevertheless when given the chance to turn in the missing work from the packets, Neil did not submit the work. As Mrs. Dean's and Ms. Strong's seminars were scheduled at the same time and their classes were next door to one another, near the end of the semester Trent began to attend Mrs. Dean's seminar. Neil remained in Ms. Strong's seminar. In the end, Trent was given an opportunity to continue on with the class. He completed recovery and eventually raised his average above 70. Neil was not given such an opportunity as any student with an average below 60 was not eligible to remain in the class. Neil's average was a 58. For second semester, he enrolled in a virtual AP Statistics class.

Perception: "We have two different thought processes." Since Neil and Trent were best friends with the Zora and Madison respectively, their circumstances in Calculus begged the question, "Why did you not ask her for help?" Previously, Madison stated that she often advised Trent to study and the characters arranged study groups in preparation for big tests. In general, though, they did not study together.

> TRENT: Let me see. Okay, I have thought about asking Madison for help. Um, but I don't. I don't, not because I don't think Madison can't help me. I just think that the process Madison gets for some things, we have two different thought processes really when it comes to math. You know, like, literature and things, you know, we do help each other on but you know, math, it's a completely different thought process that we have. And, so, you know it's like really hard for me to understand some of the things that she's doing because, you know, you know, she gets it a lot and I don't. And so, I sort of get lost… And I think Madison does understand how I'm feeling. I just don't think she understands how to explain it to me so that I get it too. Because, I think, you know, it may come easier to her but just because it's coming easier to her doesn't mean, like, she knows how to relay it to me.

Other factors of academic success

The friendships in which the students were engaged were not the only factors that contributed to their academic success. Each of the characters cited various sources from which they drew the fortitude to be high achievers. Family was paramount to all; along with their faith in God and Allah, as well as a sense of owing the community that helped to raise them and feeling obligated to make good on the promise of such high hopes for their futures.

Summary

In this chapter, I provided context for the school environment in which the students entered 9th grade year and reasons why parents ultimately decided to enroll their children in Hillman's magnet program as opposed to sending them to North county schools. The characters were introduced using descriptive depictions of their visages and comportments. How they met was chronicled and their thoughts on their relationships and the effect of those friendships on academics were explored. Classroom interactions were examined for deeper insight into the mechanics of their friendships. Excerpts from observation logs and interviews with the characters, principal, magnet coordinator, and parents were woven throughout the narrative in an effort to maintain the trustworthiness and credibility of the findings.

The socio-emotional factor that contributed most to the academic success of the characters of this study was support as revealed by the students. They were very clear on the meaning of friendship and what it meant to them individually, in terms of their relationships with one another and how those ties affected them academically; principally, in AP Calculus. The support of friends was the foundation on which they built confidence to blossom socially, to face detractors of their success, and to reach for greater academic success.

In chapter 5, I discuss these themes and their implications for teaching and learning mathematics. Further, I provide recommendations for mathematics teachers and future researchers.

5 DISCUSSION AND RECOMMENDATIONS

This chapter presents a discussion of the practical and theoretical implications of my study of four academically successful African American high school students and how they negotiate success in mathematics classrooms. Within this chapter, I revisit the purpose of the study, the research questions, the methodological approach, and the theoretical framework. I make recommendations for those invested in helping to produce African American students who are high achievers in mathematics. I then offer suggestions for future research and concluding remarks.

Implications of the Study

The Purpose

Nationally, the outlook for Africans Americans in K-12 education is dismal. While gains are being made, African Americans still lag behind their White peers. The latest reports by the National Center for Education Statistics (2009) show a 31 point gap between 8th grade African Americans and Whites in mathematics. While statistics such as these are in abundance, there are few accounts of stories of success (Berry, 2005; Jett, 2009; Stinson, 2004). Even fewer still are studies of how students negotiate said successes, particularly on the high school level. Further, studies directly related to the role of socio-emotional interpersonal relationships and the means by which African American high school students negotiated that space in terms of successful math performance were significantly limited.

In this study, I explore the nature of the socio-emotional factors in the relationships between school friends and to examine manners in which students negotiated academic success in mathematics through these relationships. Through an ethnographic methodological approach embedded within a critical race theoretical perspective, I explored how four African American high students negotiated academic success in mathematics classrooms using friendships.

Research Questions

The research question and sub-questions that guided this study are:

How do academically successful African American high school students negotiate academic success in mathematics classes using peer relationships?

Specifically, I address the following:

a. What are the socio-emotional factors in peer relationships contributing to the academic success of these students in mathematics?
b. How do students perceive the nature of socio-emotional relationships with peers that contribute to their academic success in mathematics?

Methodological Implications

I employed ethnography to explore socio-emotional factors in peer relationships in one AP Calculus AB class in a high school in a major city in the Southeast. Using ethnography, I investigated the culture and the social experiences that occurred in everyday life and provided "thick description" (Geertz, 1973) of the phenomenon being examined (Merriam, 2009; Wolcott, 1994) by employing methods such as observations, interviews, the collection of artifacts and researcher introspection.

Four students participated in the study. From mid-September to the first week of December 2013, I observed and audio-recorded a total of 24, 70 minute classroom sessions.

During the period of September to April, I collected artifacts and conducted 15 audio-recorded interviews including 8 student interviews, 3 teacher interviews, and 1 interview each with the principal, the parents of a character and a community member/parent. Moreover, I had several informal conversations with the characters and the teacher over the period of the study.

I began analysis of the data as I transcribed interviews, observation logs and researcher memos. I confirmed emerging themes and examined classroom behaviors in interviews with the students and teacher; thus employing methodological triangulation (Denzin, 1970; Cohen, et.al, 2011) to increase the validity of this study. I used five coding techniques to eventually narrow the focus of the study to the most prominent emergent themes. Those techniques were: 1) structural coding (MacQueen, 2008; Saldaña, 2013); 2) in vivo coding (Bernard, 2002; Saldaña, 2013); 3) subcoding (Gibbs, 2007; Miles and Huberman, 1994; and Saldaña, 2013); 4) eclectic coding; and 5) axial coding. I then eliminated extraneous codes and categorized the remaining codes by themes. The analyses of my results are located in Chapter 4.

The observations were critical in revealing how the characters interacted with one another socially and academically in a mathematics classroom setting. The observations highlighted the type of class work (i.e., group work, board work, etc.) in which the characters engaged with one another and the teacher's role in facilitating in such engagements. I discovered the characters were much more cooperative with one another than with other members of the class. In their interviews, the characters addressed their relationships and why they were more comfortable with each other in class expressing the friendships they had cultivated over the years provided the level of comfort that allowed them to work well with the other characters in the study.

Epistemological Implications

Along with the ethnographic methodological approach, I employed a critical race theoretical and methodological framework to investigate how the characters navigated academic success in mathematics classrooms using friendships. The most salient tenant of CRT used within this study was storytelling. Storytelling allowed the students in my study to give "voice" to their lived experiences in mathematics from a minority viewpoint (Ladson-Billings, 1998). CRT as a methodological framework (Solórzano & Yosso, 2002) was the vehicle by which they were able to do so, chronicling their paths to academic success as African American high school students of mathematics using friendships as resources. Hence, CRT and ethnography were appropriate for this study as storytelling was a critical component of both. Another tenant of CRT that was applicable to this study, but secondary to storytelling was the intersection of race and racism. Although none of the characters experienced racism at Hillman, issues of race and racism undergirded the decision for them to remain in the community and to attend Hillman rather than another magnet school in north Shelby County.

Summary of the Findings

The findings of this study were extremely nuanced and this review is by no means exhaustive but an effort to bring to fore the most significant points and emergent themes for discussion. Those themes are as follows:

1) Selective narrowing of social interactions
2) Interpersonal relationships affect academic identity and behaviors
3) Interpersonal engagement
4) Pursuit of emotionally gratifying interactions
5) Satisfaction of emotional needs through social networks
6) Effect of collaborative learning
7) Illusion of control

I argue that the characters in this study built their friendships over time and it benefitted them in terms of classroom interactions with one another. Other researchers (Ainsley, 1995; Battistich & Hom, 1997; Crosnoe et al., 2003; Farmer et al., 2011; Hargreaves, Earl, & Ryan, 1996; Jones, et al., 2011; Pianta, 1998) who investigated peer relationships found that student engagement in the classroom was encouraged among friends with similar academic identities. They were most comfortable with one another and relished the interactivity the class provided. Neither character had qualms with board work and welcomed opportunities to explain their work and receive input in that setting. Seating played a part in how the characters engaged and their level of engagement in classroom activities; however, it was no indication of how well the students performed in the class overall. When allowed to choose their seatmates, the characters were very interactive with one another. Otherwise, Madison and Zora withdrew to themselves opting to work quietly rather than as willing characters. Neil and Trent, on the other hand, were more apt to be conciliatory in those situations.

Group work and the interactive nature of the class benefitted Madison and Zora in that being able to explain the concepts to others was confirmation that they had a grasp of the concepts. From observations, it appeared that Neil and Trent were experiencing similar outcomes. It was revealed during the interviews, though, that they were not performing optimally in the class. They did understand most of what was discussed in class, but it was not translating successfully to passing quiz and test scores. While they were both encouraged by Madison and Zora to study and complete the homework, Neil and Trent both fell victim to prior habits in other math classes where homework was a minor factor in their overall grade. By the time they realized their error, success in the class was beyond their grasp. They were compelled by the nature of their friendships to compete with Madison and Zora but in this case, what had

worked for them in the past in terms of pulling A's out of classes at the end of the semester was not feasible as homework proved to be a greater part of their grade than they anticipated.

Each of the characters identified support as the most prominent socio-emotional factor contributing to their friendships and their academic success. Support took on many forms within their relationships. All but one of the characters felt pressure as high achievers to be successful and to publicly maintain that status. Acceptance from the friendships they cultivated with one another served as a buffer from negative experiences (Argyle, 1999; Crosnoe et al., 2003; Flashman, 2012; Glover et al., 1998; McCarthy, Pretty, & Catano, 1990) such as being ridiculed for asking questions in class or for striving to remain among the top ranked of the class.

Though they each had one another's support, the pressure was at times overwhelming. Although Neil and Trent sat together in class daily and discussed the work given in class, neither asked Madison or Zora for help nor did they study together – any of them. There were occasional study groups. Madison and Zora were even party to overnight study sessions when faced with big exams. Even then, they were not in the same groups. The girls strongly admonished Neil and Trent to study and do the homework. The boys, though, had not developed study habits. Trent suffered in silence until early December when he requested a conference with Mrs. Dean and his mother realizing that he was very much in danger of not passing the class. While Madison and Zora had both learned to ask for help, Trent felt he should have known the material and was embarrassed to say he was struggling in the class as he had never experienced such difficulties in a math class that did not ultimately end in success.

All but one of the characters defined friendship as more than classroom interactions. Friendship, to them, meant spending time with one another outside of class in meaningful ways such as visiting one another's homes, planning and enjoying activities unrelated to school,

sharing successes and failures and being a listening ear when needed. There was healthy competition amongst the characters as one of the friends in Madison's and Trent's circle was also salutatorian but never in a derisive manner that would be damaging to their friendship. This is in contrast to studies that imply that in order for African Americans to be successful they must choose academics over a social life by disassociating themselves from other African Americans who are often labeled as lower performing academically (Bempechat, 1998; Steinberg, et al., 1996; Suskind, 1998).

The friendships were fostered by them being in the magnet program travelling together in their cohort since 9th grade. While each of the characters had friends outside the magnet program, they each admitted having difficulties keeping up with the friendships because they did not see them on a regular basis. Although the magnet program was not exclusive to only magnet students, it did provide a cocoon from most outside activity within the school that might interfere with the characters' studies. Unfortunately, it also perpetuated a sense of magnet students against non-magnet students. There was division within the magnet program as well, however when faced with what might be perceived to be an affront to the magnet program as a whole they quickly closed rank.

Educational Implications

Although Mrs. Dean had taught the characters in my study more than once, she was not very familiar with them personally and failed to make a crucial connection that might have altered the outcome of the class for the boys. Neil and Trent were very eager to be in her class once they learned she would be the teacher because of prior positive encounters. They spoke of instances where, in previous classes, she would send another student to one of their other classes to remind them to submit or collect homework that was due. AP Calculus was different. They

all conceded that she was a good teacher but said she was not "warm and fuzzy" and that she had changed from the time they last had a class with her to the period of them being in her AP Calculus class. She was not a teacher they felt they could go to with any problems they might have been experiencing. There was an invisible barrier perceived by the characters that made her somewhat unapproachable in that regard.

On the other hand, Ms. Strong, the AP Calculus BC and seminar teacher, was condescending. Both Mrs. Dean and Ms. Strong encouraged and facilitated group work but Ms. Strong was very forceful in that students absolutely had to depend on one another to get the work done before they could go to her with questions; whereby, a situation such as Madison and Zora withdrawing to themselves due to being in a group with undesirable group members would never have happened if they were to be successful in the class. Ironically, half of Mrs. Dean's class either failed first semester or selectively removed themselves from her class while Ms. Strong only lost one student due to discipline measures related to being the master mind behind a grade scandal. It is significant to note that Ms. Strong taught the more rigorous of the two Calculus classes.

The instability of Hillman was a critical factor in school choice for parents. Even though Dr. Soren temporarily stabilized Hillman by bringing a fresh approach to the administration, the community was at odds with his appointment. Subsequently, he did exactly what they feared he would; he left. Some argued he had no allegiance to stay at Hillman and complete the transformation he began as he was white and the children he served were predominately African American. To use a colloquialism of Mrs. Revere's - he had no "skin in the game." Likewise, there were teachers at Hillman, Mrs. Dean included, who lived and taught in the community but sent their children to schools in north Shelby. Many parents felt there was no vested interest in

the children they taught if their local school not "good enough" to have their own children attend.

There was also the issue of magnet students often being pitted against non-magnet students. The magnet program had a budget granted by the school board as well as a booster club of dedicated parents who paid dues toward initiatives and activities they desired to implement within the program. Therefore, magnet students were afforded greater opportunities such as field trips, access to summer internships, first choice at the SAT preparatory class and early admittance to college fairs held at Hillman. Students who were scholastically talented enough to be granted access to the program were perceived to be from "good" middle-class families who held education in high esteem and were thus "special."

On the contrary, there were students who were eligible to be in the magnet program who lobbied their parents not to be designated. There was too much pressure to perform, they felt. They also considered the students in the program to be an elitist group with whom they did not want to be associated. Further, students who were not in the program faired fine on any one of the pathways designated for all students such as: Engineering, Technology, Arts and Humanities, Business, Healthcare, Computer Science, or the Sciences. Nevertheless, if their classes were aligned properly, they would eventually be enrolled in classes that were considered magnet classes.

Limitations of the Study

The study had 4 limitations: 1) I was a member of the community in which I studied; 2) the volume of data; 3) the unusual schedule of the research site; and 4) my proximity to the students as I observed the classroom. As an African American female who has achieved academic success in mathematics, I came to this study with a core set of values as a member of

the African American community and with beliefs about academic success and African Americans in mathematics. While I realized and did not aspire my role in the field to be that of a "detached researcher" (Crang & Cook, 2007), I recognized the need to remain objective in my approach allowing themes to emerge through data collected in the process of the study (Carter, 2003). Yet, DeWalt and DeWalt (2011) submit that objectivity is impossible expressing the best an ethnographic researcher can do is to express any ethnographer biases and allow consumers of the subsequent work to come to terms with the investigator's disclosures. Nonetheless, because I understood the culture of African Americans and the nature of academic success in mathematics, I submit that I was able to better relate to the selected characters for this body of research and thereby, offered a rich analysis of my findings.

Whereas I was a member of the culture I studied, I was not from the characters' generation. O'Kane (2000) posits that "the biggest challenge for researchers working with children is the disparities in power and status between adults and children" (p. 136). Early interactions with the characters were an exercise in gaining their trust. I fully explained to them the scope of my research and what I hoped to capture while I was in their midst. Confidentiality was stressed and exhibited. As mentioned previously, the characters had the opportunity to review my findings and have given their perceptions of my findings.

Schram (2006) asserts that conducting an ethnography "means engaging in a kind of scholarship/action that places [the researcher] in a participatory framework of researching with and for individuals and groups in the interest of social justice" (p. 98). Therefore, I approached my study cognizant of what Schram identified as the basic assumptions of an ethnographer. First, how humans behave and how people make meaning of life experiences is highly variable. However, patterns emerged through observation and interviews. Interpretation of these patterns

was feasible only when I discovered what the research characters did and their reasoning for their actions. Nevertheless, ethnography does not provide a comprehensive assessment of any research endeavor, but it allows a perspective through a particular lens (Schram, 2006). Even so, ethnography was an appropriate methodology for the research questions regarding this study as I sought to understand positive peer relationships among African American students who demonstrated an above average aptitude for mathematics.

The volume of data produced within this study made data analysis an arduous process. It was difficult to differentiate socio-emotional factors and perceptions as there were many that could apply to the characters' stories. Applying the socio-emotional factor or perception that best fit the scenario was challenging as it shaped the over direction of the study. The unique schedule of the research site limited the number of days that could be spent observing the classroom. Further, observations only took place during the first semester. This was mitigated by the extended time period of each individual observation and the interviews with the characters over the seven month period in the field. However, studies over a longer time frame would reveal more about how the characters negotiated academic success in mathematics using interpersonal relationships.

As an outsider and observer of the classroom, I was cognizant of the students' space within the classroom. Because I began my study in the sixth week of school, I was careful not to disrupt what was already in place in terms of where students sat in the class and I was especially aware of the other eleven students who were not characters in my study. For those reasons, I chose to sit near the back of the classroom. Furthermore, the characters did not all sit with one another. To sit close to one meant I might miss conversations of the others and vice versa. This is considered a limitation of the study as I was not able to hear all my characters were saying to

one another when discussing the goings on of the class. Beginning the study earlier in the semester, perhaps at the start of the school year, would have alleviated this issue as I would have been able to position myself closer to the students in the classroom without creating a disruption to their already set routines.

Theoretical Implications

While it was found that friendships played a dominant role in the characters' academic success, study practices that could not be affected by friendships were a prominent factor in their success or failure in AP Calculus. Neil and Trent failed to understand the gravity of the need to complete the homework in the class based on prior experiences. However, Mrs. Dean was aware of severity of the situation in terms of performance on the quizzes and exams, yet she had difficulty connecting with the male characters to determine how best to assist them in their struggles with the content. Her teaching methods were varied and aligned with various student learning styles, but she never took the initiative to reach out to the characters individually to learn about their needs to be successful in the class.

To better understand the needs of students in the classroom, Philipp and Thanheiser (2010) recommend "interviewing students about their mathematical understanding" (p. 14). This technique introduces, what Philipp and Thanheiser (2010) termed, a "caring posture" toward the students. It opens a space for dialogue to learn more about not only the students' mathematical backgrounds and needs but also their personal feelings toward math and their study habits. Tapping into this knowledge increases the probability for success for all involved, but namely the students.

Future research opportunities related to this study include but are not to 1) an extended investigation of teaching styles as they relate to peer groups in mathematics classrooms and 2) an

examination of mixed-gender friendships and their levels of performance in mathematics classrooms. The characters admitted they felt Mrs. Dean was the better teacher, but overall they performed better in Ms. Strong's class. A study of different teaching styles and how group work is used to support learning would give further insight into how best to facilitate instruction in mathematics classrooms.

Secondly, the girls in the study were much focused on their studies and managed and prioritized their busy schedules well. In turn, they had two of the highest overall grades in Mrs. Dean's AP Calculus class. The boys did well throughout high school mathematics but stated they were "coddled" in earlier math classes and therefore were not prepared for the rigor of the class. A longitudinal investigation of mixed-gender high school friendships and their approach to mathematics would be informative for educators who want to learn more about gender-specific teaching strategies.

Summary and Concluding Thoughts

This project was very fulfilling for me and surprising as well. The students were much more in tune with how they achieved and negotiated their academic success than I anticipated. They were open and accommodating to my intrusion of their regular routines and very forthcoming about their academic and personal lives as well as their vulnerabilities and frustrations. The interviews were very revealing and confirmed some things I observed in the classroom on one hand; yet, I was also shocked to learn that observations of Neil and Trent in the classroom were very far off from the reality of their actual performance in the class.

At the beginning of the dissertation, I sought to understand the role of friendships among African American high school students in mathematics by giving the students themselves a voice. I chose upper level high schools because I felt they would be mature enough to speak to

the meaning of true friendship, what it meant to them and how it affected their academic success. I wanted to explore if and then what role those friendships played in their successes in hopes of allowing educators a view of academic achievement among African American students in mathematics from the students lenses. From this, I hope teachers will develop teaching and learning strategies to further propel more African American students toward success in mathematics by recognizing and capitalizing on friendships in the classroom.

REFERENCES

Ahmad, S. (2012). Impact of socio-emotional school environment on academic achievement of teenager-boys. *International Journal of Scientific and Research Publications, 2*(7), 1-4.

Ainley, J. (1995). Students' views of their schools. *Unicorn, 21,* 5-16.

Antonucci, T., & Akiyama, H. (1995). Convoys of social relations: Family and friendships within a life span context. In R. Blieszner & V. Hilkevitch-Bedford (Eds.), *Handbook of aging and the family* (pp. 355-371). Westport, CT: Greenwood Press.

Anyon, J. (1980). Social class and the hidden curriculum of work. *Journal of Education, 162*(1), 67-92.

Anyon, J. (1981a). Elementary schooling and distinctions of social class. *Interchange, 12,* 118-132.

Anyon, J. (1981b). Social class and school knowledge. *Curriculum Inquiry, 11,* 3-42.

Argyle, M. (1999). The development of social coping skills. In E. Frydenberg (Ed.), *Learning to cope: Developing as a person in complex societies* (pp. 81-106). Oxford, UK: Oxford University Press.

Aronson, J., & Steele, C. M. (2005). Stereotypes and the fragility of academic competence, motivation, and self-concept. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation* (pp. 436-456). New York, NY: Guilford Publications.

Aseltine, R. (1995). A reconsideration of parental and peer influences on adolescent deviance. *Journal of Health and Social Behavior, 3,* 103-121.

Azmitia, M., & Cooper, C. R. (2001). Good or bad? Peer influences on Latino and European American adolescents' pathways through school. *Journal of Education for Students Placed at Risk. 6,* 45-71.

Baker, J. A., Clark, T. P., Maier, K. S., & Viger, S. (2008). The differential influence of instructional context on the academic engagement of students with behavior problems. *Teaching and Teacher Education, 24,* 1876-1883.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory.* Englewood Cliffs, NJ: Prentice Hall.

Bandura. A. (1997). *Self-efficacy: The exercise of control.* New York, NY: W.H. Freeman/Times Books/Henry Holt & Co.

Bandura, A. (2000). Exercise of human agency through collective efficacy. *Current Directions in Psychological Science, 9*(3), 75-78.

Bandura, A. (2006). Toward a psychology of human agency. *Perspectives on Psychological Science, 1*(2), 164-180.

Bandura, A., & Cervone, D. (2000). Self-evaluative and self-efficacy mechanisms of governing the motivational effects of goal systems. In E. T. Higgins & A. W. Kruglanski (Eds.), *Motivational science: Social and personality perspectives* (pp. 202-214). New York, NY: Psychology Press.

Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173-1182.

Battistich, V., & Hom, A. (1997). The relationship between students' sense of their school as a community and their involvement in problem behaviors. *American Journal of Public Health, 87,* 1997-2001.

Bell, D. (1992). *Faces at the bottom of the well: The permanence of racism.* New York, NY: Basic Books.

Bempechat, J. (1998). *Against the odds: How "at risk" children exceed expectations.* San Francisco, CA: Jossey-Bass.

Benner, A. D. (2011). Latino adolescents' loneliness, academic performance, and the buffering nature of friendships. *Journal of Youth and Adolescence, 40,* 556-567.

Bernard, H.R. (2002). *Research methods in anthropology: Qualitative and quantitative methods* (3rd ed.). Walnut Creek, CA: AltaMira Press.

Berndt, T. J. (1999). Friends' influence on students' adjustment to school. *Educational Psychologist, 34*(1), 15-28.

Berndt, T. J., & Keefe, K. (1996). Friends' influence on school adjustment: A motivational analysis. In J. Juvonen & K. R. Wentzel (Eds.), *Social motivation: Understanding children's school adjustment* (pp. 248-278). New York, NY: Cambridge University Press.

Berry, R. Q. (2003). *Voices of African American male students: A portrait of successful middle school mathematics students.* (Unpublished doctoral dissertation). University of North Carolina, Chapel Hill, NC.

Berry, III, R. Q. (2005). Voices of success: Descriptive portraits of two successful African American male middle school mathematics students. *Journal of African American Studies, 8*(4), 46-62.

Berry, III, R. Q. (2008). Access to upper-level mathematics: The stories of successful African American middle school boys. *Journal for Research in Mathematics Education, 39*(5), 464-488.

Bonilla-Silva, E. (1997). Rethinking racism: Toward a structural interpretation. *American Sociological Review, 62*, 465-480.

Bonilla-Silva, E. (2001). *White supremacy and racism in the post-civil rights era.* Boulder, CO: Lynne Reinner.

Bonner, F.A. (2000). African American Giftedness: Our Nation's Deferred Dream. *Journal of Black Studies, 30*(5), 643-663.

Brayboy, B. (2005). Towards a tribal critical race theory in education. *The Urban Review, 37*(5), 425-446.

Brewley-Kennedy, D. (2005). The struggles of incorporating equity into practice in a university mathematics methods course [Monograph No. 1]. *The Mathematics Educator*, 16-28.

Brooks, R. L. (2009). *Racial justice in the age of Obama.* Princeton, NJ: Princeton University Press.

Bulmer, M. (1984). Introduction: Problems, theories, and methods in Sociology – (how) do they interrelate? In M. Bulmer (Ed.), *Sociological Research Methods: An Introduction* (2nd ed.) (pp. 1-37). London, UK: Macmillan.

Camarena, P. M. (1991). Conformity in adolescence. In R. M. Lerner, A. C. Petersen, & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (Vol. 1). New York, NY: Garland.

Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validation by the multi trait-multimethod matrix. *Psychological Bulletin, 56*(2), 81-105.

Carbado, D.W. (2002). Afterword: (E)racing education. *Equity & Excellence in Education, 35*(2), 181-194.

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology & Aging, 7*(3), 331-338.

Carstensten, L. L. (1993). Motivation for social contact across the life span: A theory of socioemotional selectivity. In J. E. Jacobs (Ed.), *Nebraska Symposium on Motivation, 1992: Developmental perspectives on motivation* (pp. 209-254). Lincoln, NE: University of Nebraska Press.

Carstensen, L. L. (1995). Evidence for a life-span theory of socioemotional selectivity. *Current Directions in Psychological Science, 4*(5), 151-156.

Carstensen, L. L. (1998). A life-span approach to social motivation. In J. Heckhausen & C. S. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 341-364). New York, NY: Cambridge University Press.

Carter, M. (2003). Telling tales out of school: "What's the Fate of a Black Story in a White World of White Stories?" In G. R. López & L. Parker (Eds.), *Interrogating racism in qualitative research methodology* (pp. 1-18). New York, NY: Peter Lang.

Chung-Hall, J., & Chen, X. Y. (2010). Aggressive and prosocial peer group functioning: Effects on children's social, school, and psychological adjustment. *Social Development, 19,* 659-680.

Clarke, A. E. (2005). *Situational analysis: Grounded theory after the postmodern turn.* Thousand Oaks, CA: SAGE.

Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education* (7th ed.). New York, NY: Routledge.

Cole M., & Scribner, S. (1974). Theorizing about socialization of cognition. In T. Schwartz (Ed.), *Socialization as cultural communication* (pp. 157-176). Berkeley, CA: University of California Press.

College Board. (1999). *Reaching the top: A report of the National Task Force on Minority High Achievement.* New York, NY: Author.

Conchas, G. (2001). Structuring failure and success: Understand the variability in Latino school engagement. *Harvard Educational Review,* 70(3), 475-504.

Conchas, G. (2006). *The color of success: Race and high-achieving urban youth.* New York, NY: Teachers College.

Conchas, G. Q., & Goyette, K. A. (2001). The race is not even: Minority education in a post-affirmative action era. *Harvard Journal of Hispanic Policy, 13*, 87-102.

Crang, M., & Cook, I. (2007). *Doing ethnographies.* London, UK: SAGE Publications Ltd.

Crenshaw, K., Gotanda, N., Peller, G., & Thomas, K. (eds.). (1995). *Critical race theory: Key writings that formed the movement.* New York, NY: New Press.

Crosnoe, R. (2000). Friendships in childhood and adolescence: The life course and new directions. *Social Psychology Quarterly, 63*, 377-391.

Crosnoe, R., Cavanagh, S., & Elder, Jr., G. H. (2003). Adolescent friendships as academic resources: The intersection of friendship, race, and school disadvantage. *Pacific Sociological Association, 46*(3), 331-352.

Darder, A. & Torres, R. (2002). Proceedings from annual meeting of the American Educational Research Association: *Critical race theory or a critical theory of race?* New Orleans, LA.

Darder, A., & Torres, R. D. (2004). *After race: Racism after multiculturalism.* New York, NY: NYR Press.

Datnow, A., & Cooper, R. (1997). Peer networks of African American students in independent school: Affirming academic success and racial identity. *Journal of Negro Education, 66,* 56-72.

Delgado, R. (1987). The ethereal scholar: Does critical legal studies have what minorities want? *Harvard Civil Rights-Civil Liberties Law Review, 22,* 301-322.

Delgado, R. (1989a). Storytelling for oppositionists and others: A plea for narrative. *Michigan Law Review, 87*(8), 2411-2441.

Delgado, R. (1989b). Symposium: Legal storytelling. *Michigan Law Review, 87,* 2073.

Delgado, R. (1990). When a story is just a story: Does voice really matter? *Virginia Law Review, 76,* 95-111.

Denzin, N. K. (1970). *The research act in sociology: A theoretical introduction to sociological methods* (3rd ed.). Englewood Cliffs, NJ: Prentice-Hall.

Denzin, N. (1978). *The research act: A theoretical introduction to sociological methods.* New York, NY: McGraw-Hill.

DeWalt, K. M., & DeWalt, B. R. (2011). *Participant observation: A guide for fieldworkers* (2nd ed.). Lanham, MD: AltaMira Press.

Eisenhart, M. (1988). The ethnographic research tradition and Mathematics Education research. *Journal for Research in Mathematics Education, 19,* 99-114.

Essed, P. (2002). Everyday racism: A new approach to the study of racism. In P. Essed & D. Goldberg (Eds.), *Race critical theories* (pp. 176-194). Malden, MA: Blackwell.

FCS Data Warehouse. (2013). *Racial Composition 2013-2014.* Atlanta, GA: Author.

Farmer, T. W., Lines, M. M., & Hamm, J. V. (2011). Revealing the invisible hand: The role of teachers in children's peer experiences. *Journal of Applied Developmental Psychology, 32,* 247-256.

Flashman, J. (2012). Academic achievement and its impact on friend dynamics. *Sociology of Education, 85(1),* 61-80.

Flores-Gonzalez, N. (2005). Popularity versus respect: School structure, peer groups and Latino academic achievement. *International Journal of Qualitative Studies in Education, 18*(5), 625-642.

Fordham, S., & Ogbu, J. (1986). Black students' school success: Coping with the "Burden of 'Acting White,'" *Urban Review, 18,* 176-206.

Foster-Clarke, F. S., & Blythe, D. A. (1991). Peer relations and influences. In R. M. Lerner, A. C. Petersen & J. Brooks-Gunn (Eds.), *Encyclopedia of adolescence* (Vol. 2). New York, NY: Garland.

Friese, S. (2012). *Qualitative data analysis with ATLAS.ti.* London, NY: SAGE.

Fryer, R.G. (2006). "Acting White": The social price paid by the best and brightest minority students. *Education Next, 6*(1), 53-59.

Fryer, R.G., & Torelli, P. (2010). An empirical analysis of 'acting white.' *Journal of Public Economics, 94,* 380-396.

Furstenberg, F., Cook, T., Eccles, J., Elder, G., & Sameroff, A. (1999). *Managing to make it: Urban families and adolescent success.* Chicago, IL: University of Chicago Press.

Geertz, C. (1973). *The interpretation of cultures.* New York, NY: Basic Books.

Geertz, C. (1974). From the native's point of view: On the nature of anthropological understanding. *Bulletin of the American Academy of Arts and Sciences, 28*(1), 26-45.

Gibbs, G. R. (2007). *Analysing qualitative data.* London, UK: Sage.

Glover, S., Burns, J., Butler, H., & Patten, G. (1998). Social environments and the emotional wellbeing of young people. *Family Matters, 49,* 11-16.

Goetz, J., & LeCompte, M. (1984). *Ethnography and qualitative design in education research.* New York, NY: Academic Press.

Gottman, J. M., & Parker, J. G. (Eds.). (1987). *Conversations of friends.* New York, NY: Cambridge University Press.

Graham, S. (1994). Motivation in African Americans. *Review of Education Research, 64*(1), 55-117.

Greene, M. (1996). In search of a critical pedagogy. In P. Leistyna, A. Woodrum, & S. A. Sherblom (Eds.), *Breaking free: The transformative power of critical pedagogy* (pp. 13-30). Cambridge, MA: Harvard Educational Review.

Guinier, L. (1991). No two seats: The elusive quest for political equality. *Virginia Law Review, 77,* 1413-1514.

Gutiérrez, R. (2010). The sociopolitical turn in mathematics education. *Journal for Research in Mathematics Education, 41*(0), 4-36.

Hargreaves, A., Earl, L., & Ryan, J. (1996). *Schooling for change: Reinventing education for early adolescents.* Washington, DC: Falmer Press.

Hiebert, J. Carpenter, T. P., Fennema, E., Fuson, K., Wearne, D., & Murray, H. (1997). *Making sense: Teaching and learning mathematics with understanding.* Portsmouth, NH: Heinemann.

Horvat E. M., & Lewis, K. S. (2003). Reassessing the "Burden of 'Acting White'": The importance of peer groups in managing academic success. *Sociology of Education, 76*(4), 265-280.

Howard, T. C. (2003). "A tug of war for our minds." African American high school students' perception of their academic identities and college aspirations. *High School Journal, 87*, 4-15.

James, A. (2001). Ethnography in the study of children and childhood. In P. Atkinson, A. Coffey, S. Delamont, J. Lofland, & L. Lofland (Eds.), *Handbook of Ethnography* (pp. 246-257). Thousand Oaks, CA: Sage Publications.

Jett, C. C. (2009). *African American men and college mathematics: Gaining access and attaining success.* (Unpublished doctoral dissertation). Georgia State University, Atlanta, GA.

Johnson, D. W., Johnson, R. T., Buckman, L. A., & Richards, P. S. (1985). The effect of prolonged implementation of cooperative learning on social support within the classroom. *Journal of Psychology, 119,* 405-411.

Jones, M. H., Audley-Piotrowski, S. R., & Kiefer, S. M. (2012). Relationships among adolescents' perceptions of friends' behaviors, academic self-concept, and math performance. *Journal of Educational Psychology, 104*(1), 19-31.

Kelman, H. C. (1961). Processes of opinion change. *The Public Opinion Quarterly, 25,* 57-78.

Klopfenstein, K. (2004). Advanced placement: Do minorities have equal opportunity? *Economics of Education Review 23*(2), 115-131.

Kraft, C. L. (1991). What makes a successful Black student on a predominately white campus? *American Education Research Journal, 28*(2), 423-443.

Ladd, G. W., Herald-Brown, S. L., & Kochel, K. P. (2009). Peers and motivation. In K. R. Wentzel & A. Wigfield (Eds.), *Handbook of motivation at school* (pp. 323-348). New York, NY: Routledge.

Ladson-Billings, G. (1998). Just what is critical race theory, and what's it doing in a nice field like education? *International Journal of Qualitative Studies of Education, 11*(1), 7-24.

Ladson-Billings, G.J. (1999). Preparing teachers for diverse student populations: A critical race theory perspective. *Review of Research in Education, 24*, 211-247.

Lee, S. Y., Olszewski-Kubilius, P., & Peternel, G. (2009). Follow-up with students after 6 years of participation in Project EXCITE. *Gifted Child Quarterly, 53*(2), 137-156.

Lee, S. Y., Olszewski-Kubilius, P., & Peternel, G. (2010). The efficacy of academic acceleration of gifted minority students. *Gifted Child Quarterly, 54*(3), 189-208.

Leistyna, P., & Woodrum, A. (1996). Context and culture: What is critical pedagogy? In P. Leistyna, A. Woodrum, & S. A. Sherblom (Eds), *Breaking free: The transformative power of critical pedagogy* (pp. 1-11). Cambridge, MA: Harvard Educational Review.

Lewis, A. E. (2001). There is no 'race' in the school yard: Color-blind ideology in an (almost) all-white school, *American Educational Research Journal, 38,* pp. 781-811.

Lewis, A. E. (2003a). Everyday race-making. *American Behavioral Scientist, 47,* 283-305.

Lewis, A. E. (2003b). *Race in the schoolyard: Negotiating the color line in classrooms and communities.* New Brunswick, NJ: Rutgers University Press.

Lewis, A. E. (2004). "What group?" Studying whites and whiteness in the era of "color-blindness." *Sociological Theory, 22,* 623-646.

Lichtman, M. (2010). *Qualitative research in education: A user's guide* (2nd ed.). Thousand Oaks, CA: SAGE.

Lipman, P. (1997). Restructuring in context: A case study of teacher participation and the dynamics of ideology, race, and power. *American Educational Research Journal, 34,* pp. 3-38.

Lipsitz, G. (1998). *The possessive investment in whiteness: How white people profit from identity politics.* Philadelphia, PA: Temple University Press.

MacQueen, K. M. & Guest, G. (2008). An introduction to team-based qualitative research. In G. Guest & K. M. MacQueen (Eds.), *Handbook for team-based qualitative research* (pp. 3-19). Lanham, MD: AltaMira Press.

Madsen, J. A., & Mabokela, R. O. (2000). Organizational culture and its impact on African American teachers. *American Educational Research Journal, 37,* pp. 849-876.

Martin, D. (2000). *Mathematics success and failure among African American youth: The roles of sociohistorical context, community forces, school influence, and individual agency.* Mahwah, NJ: Erlbaum.

Martin, D. (2006a). Mathematics learning and participation as racialized forms of experience: African American parents speak on the struggle for mathematics literacy. *Mathematical Thinking and Learning, 8,* 197-229.

Martin, D. (2006b). Mathematics learning and participation in African American context: The co-construction of identity in two intersecting realms of experience. In N. Nasir & P. Cobb (Eds.), *Diversity, equity and access to mathematical ideas* (pp. 146-158). New York, NY: Teachers College Press.

Martin, D. B. (2009). Researching race in mathematics education. *Teachers College Record, 111*(2), 295-338.

Matsueda, R., & Anderson, K. (1998). The dynamics of delinquent peers and delinquent behavior. *Criminology, 36,* 269-308.

McCarthy, M., Pretty, G., & Catano, V. (1990). Psychological sense of community and burnout. *Journal of College Student Development, 31,* 211-216.

McLaren, P. (1998). Revolutionary pedagogy in post-revolutionary times: Rethinking the political economy of critical education. *Educational Theory, 48,* pp. 431-462.

McLellan, J. A., Haynie, D., & Strouse, D. (1993). Proceedings from biennial meeting of the Society for Research in Child Development: *Membership in high school crowd clusters and relationships with family and friends.* New Orleans, LA.

Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation.* San Francisco, CA: John Wiley & Sons, Inc.

Morrison, K. R. B. (1993). *Planning and accomplishing school-centered evaluation.* Norfolk, VA: Peter Francis Publishers.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis* (2nd ed.). Thousand Oaks, CA: Sage

National Center for Education Statistics. (2009). *Achievement gaps: How Black and White students in public high schools perform on the National Assessment of Educational Progress* (NCES 2009-495). Washington, DC: U.S. Department of Education.

National Council of Teachers of Mathematics. (2000). *Principles and standards.* Reston, VA: Author.

Newman, B. M., Lohman, B. J., Newman, P. R., Myers, M. C., & Smith, V. L. (2000). Experiences of urban youth navigating the transition to ninth grade. *Youth and Society, 31*, 387-416.

Noble, R. (2011). Mathematics self-efficacy and African American male students: An examination of models of success. *Journal of African American Males in Education, 2*(2), 188-213.

Noguera, P. A. (2003). *City schools and the American dream: Reclaiming the promise of public education*. New York, NY: Teachers College Press.

Oakes, J. (1985). *Keeping track: How schools structure inequality.* New Haven, CT: Yale University Press.

Oakes, J. (1990). Opportunities, achievement, and choice: Women and minority students in science and mathematics. In C. B. Cazden (Ed.), *Review of research in education* (vol. 16, pp. 153-222). Washington, DC: American Educational Research Association.

Oakes, J., Joseph, R., & Muir, K. (2001). Access and achievement in mathematics and science. In J. A. Banks & C. A. McGee Banks (Eds.), *Handbook of research on multicultural education* (pp. 69-90). San Francisco, CA: Jossey-Bass.

Ogbu, J. (1986). Variability in minority student performance: A problem in search of an explanation. *Anthropology and Education Quarterly, 18,* 321-334.

O'Kane, C. (2000). The development of participatory techniques: Facilitating children's views about decisions which affect them. In P. Christensen & A. James(Eds.), *Research with children: Perspectives and practices* (pp. 136-160). London, UK: Falmer Press.

Oliker, S. J. (1989). *Best friends and marriage: Exchange among women.* Berkeley, CA: University of California Press.

Omi, M., & Winant, H. (1994). *Racial formation in the United States.* New York, NY: Routledge.

Oyserman, D., Brickman, D., Bybee, D., & Celious, A. (2006). Fitting in matters: Markers of in-group belonging and academic outcomes. *Psychological Science, 17*(10), 854-860.

Oyserman, D., Harrison, K., & Bybee, D. (2001). Can racial identity be promotive of academic efficacy? *International Journal of Behavioral Development, 25*(4), 379-385.

Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research, 66,* 543-578.

Pajares, F., & Kranzler, J. (1995). Self-efficacy beliefs and general mental ability in mathematical problem solving. *Contemporary Educational Psychology, 20,* 426-443.

Parker, L., & Stovall, D. O. (2004). Actions following words: Critical race theory connects to critical pedagogy. *Educational Philosophy and Theory, 36*(2), 167-182.

Pearl, R., Bryan, T., & Herzog, A. (1990). Resisting or acquiescing to peer pressure to engage in misconduct: Adolescents' expectation of probable consequences. *Journal of Youth and Adolescence, 19,* 43-55.

Pelto, P., & Pelto, G. (1974). Ethnography: The fieldwork enterprise. In J. Honigmann (Ed.), *Handbook of social and cultural anthropology* (pp. 241-288). Chicago, IL: Rand McNally.

Peshkin, A. (1982). The researcher and subjectivity: Reflections on an ethnography of school and community. In G. Spindler (Ed.), *Doing the ethnography of schooling: Educational anthropology in action* (pp. 48-67). Prospect Heights, Ill: Waveland Press, Inc.

Philipp, R. A., & Thanheiser, E. (2010). Showing your students you care: Seeing the individual trees in the classroom forest. *New England Mathematics Journal, 42*, 8-17.

Pianta, R. C. (1998). Applying the concept of resilience in schools: Cautions from a developmental systems perspective. *School Psychology Review, 27,* 407-428.

Portes, A. (1998). Social capital: Its origins and applications in modern sociology. *Annual Review of Sociology, 24,* 1-24.

Prior, L. (2003). *Using documents in social research: Introducing qualitative methods.* London, UK: SAGE.

Ream, R. K. (2005). Toward understanding how social capital mediates the impact of mobility on Mexican American achievement. *Social Forces, 84*(1), 201-224.

Reed, R. J., & Oppong, N. (2005). Looking critically at teachers' attention to equity in their classrooms. *The Mathematics Educator,* 2-15.

Richards L., & Morse, J. M. (2007). *Readme first for a user's guide to qualitative methods* (2nd ed.). Thousand Oaks, CA: SAGE.

Riegle-Crumb, C., Farkas, G., & Muller, C. (2006). The role of gender and friendship in advanced course taking. *Sociology of Education, 79*(3), 206-228.

Riegle-Crumb, C., & Callahan, R. M. (2009). Exploring the academic benefits of friendship ties for Latino boys and girls. *Social Science Quarterly, 90*(3), 611-631.

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of females and males. *Psychological Bulletin, 132,* 98-131.

Roulston, K. (2010). *Reflective interviewing: A guide to theory and practice.* Thousand Oaks, CA: SAGE Publications Ltd.

Rummens, J. A. (2003). Conceptualizing identity and diversity: Overlaps, intersections, and processes. *Canadian Ethnic Studies, 35*(3), 10-25.

Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Los Angeles, CA: SAGE.

Sampson, R. J., Morenoff, J. D., & Earls, F. (1999). Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review, 64,* 633-660.

Santrock, J. W. (1995). *Life-span development* (5th ed.). Madison, WI: Brown & Benchmark.

Santrock, J. W. (2009). *Life-span development* (12th ed.). New York, NY: McGraw-Hill.

Santrock, J. W. (2010a). *Adolescence* (13th ed.). New York, NY: McGraw-Hill.

Santrock, J. W. (2010b). *Children* (11th ed.). New York, NY: McGraw-Hill.

School profile: 2011-2012 Westlake High School. (n.d.). Retrieved from http://portal.fultonschools.org/School_Profile/Documents/DS/DS_westlake.pdf

Schram, T. H. (2006). *Conceptualizing and proposing qualitative research* (2nd ed.). Upper Saddle River, NJ: Pearson Education, Inc.

Schunk, D. H. (1981). Modeling an attributional feedback effects on children's achievement: A self-efficacy analysis. *Journal of Education Psychology, 74,* 93-105.

Schunk, D. H. (1995a). Self-efficacy, motivation, and performance. *Journal of Applied Sport Psychology, 7*(2), 112-137.

Schunk, D. H. (1995b). Self-efficacy and education and instruction. In J.E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 281-303). New York, NY: Plenum Press.

Schunk, D. H., & Hanson, A. R. (1985). Peer models: Influence on children's self-efficacy and achievement behaviors. *Journal of Educational Psychology, 77,* 313-322.

Schunk, D. H., Hanson, A. R., & Cox, P. D. (1987). Peer model attributes and children's achievement behaviors. *Journal of Education Psychology, 79,* 54-61.

Schunk, D. H., & Pajares, F. (2002). The development of academic self-efficacy. In A. Wigfield & J. S. Eccles (Eds.), *Development of achievement motivation* (pp. 15-31). San Diego, CA: Academic Press.

Schweinle, A., & Mims, G. A. (2009). Mathematics self-efficacy: Stereotype threat versus resilience. *Social Psychology of Education, 12,* 501-514.

Solórzano, D. G. (1998). Critical race theory, race and gender microaggressions, and the experience of Chicana and Chicano scholars. *Qualitative Studies in Education, 11*(1), 121-136.

Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative Inquiry, 8*(1), 23-44.

Spindler, G. (1982). General introduction. In G. Spindler (Ed.), *Doing the ethnography of schooling: Educational anthropology in action* (pp. 1-13). Prospect Heights, Ill: Waveland Press, Inc.

Spindler, G., & Spindler, L. (1982). Roger Harker and Schönhausen: From familiar to strange and back again. In G. Spindler (Ed.), *Doing the ethnography of schooling: Educational anthropology in action* (pp. 20-46). Prospect Heights, Ill: Waveland Press, Inc.

Spradley, J. (1979). *The ethnographic interview.* New York, NY: Holt, Rinehart, & Winston.

Spradley, J. (1980). *Participant observation.* New York, NY: Holt, Rinehart, & Winston.

Stanton-Salazar, R., & Dornbusch, S. M. (1995). Social capital and the reproduction of inequality: Information networks among Mexican-origin high school students. *Sociology of Education, 68,* 116-135.

Steele, C. M., & Aronson, J. A. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*(5), 797-811.

Steinberg, L. D., Brown, B. B., & Dornbusch, S. M. (1996). *Beyond the classroom.* New York, NY: Simon & Schuster.

Steinberg, L., Dornbusch, S. M., & Brown, B. B. (1992). Ethnic differences in adolescent achievement: An ecological perspective. *American Psychologist, 47*, 723-729.

Steinberg, L., & Morris, A. S. (2000). Adolescent development. *Annual Review of Psychology, 52*, 83-100.

Stinson, D. (2004). *African American male students and achievement in school mathematics: A critical postmodern analysis of agency.* (Unpublished doctoral dissertation). University of Georgia, Athens, GA.

Stinson, D. (2006). African American male adolescents, schooling (and mathematics): Deficiency, rejection, and achievement. *Review of Educational Research, 76*(4), 477-506.

Tate, IV, W. F. (1997). Critical race theory and education: History, theory, and implications. *Review of Research in Education, 22,* 195-247.

Suskind, R. (1998). *A hope in the unseen: An American odyssey from the inner city to the Ivy League.* New York, NY: Broadway Books.

Tedlock, B. (2005). Ethnography and ethnographic representation. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (3rd ed.) (pp. 455-486). Thousand Oaks, CA: Sage Publications.

Thompson, L., & Lewis, B. (2005). Shooting for the stars: A case study of the mathematics achievement and career attainment of an African American male high school student. *High School Journal, 88*(4), 6-18.

Title I – Improving the academic achievement of the disadvantaged. (2004). Retrieved from http://www2.ed.gov/policy/elsec/leg/esea02/pg1.html

Valenzuela, A. (1999). *Subtractive schooling: U.S.-Mexican youth and the politics of caring.* Albany, NY: State University of New York.

Walker, E. N. (2006). Urban high school students' academic communities and their effect on mathematics success. *American Educational Research Journal, 43*(1), 43-73.

Webb, N. M., & Mastergeorge, A. M. (2003). The development of students' helping behavior and learning in peer-directed small groups. *Cognition and Instruction, 21,* 361-428.

Wentzel, K. R., Battle, A., Russell, S. L., & Looney, L. B. (2010). Social supports from teachers and peers as predictors of academic and social motivation. *Contemporary Educational Psychology, 35,* 193-202.

Werner, N. E., & Hill, L. G. (2010). Individual and peer group normative beliefs about relational aggression. *Child Development, 81,* 826-836.

Williams, P. J. (1991). *The alchemy of race and rights.* Cambridge, MA: Harvard University Press.

Williams, S. (2010). Through the eyes of friends: An investigation of school context and cross-racial friendships in racially mixed schools. *Urban Education, 45*(4), 480-505.

Wilson, H. K., Pianta, P. C., & Stuhlman, M. (2007). Typical classroom experiences in first grade: The role of classroom climate and functional risk in the development of social competencies. *Elementary School Journal, 108,* 81-96.

Wolcott, H. F. (1987). On ethnographic intent. In G. Spindler & L. Spindler (Eds.), *Interpretive ethnography of education: At home and abroad* (pp. 37-58). Hillsdale, NJ: Erlbaum.

Wolcott, H. F. (1992). Posturing in qualitative research. In M. LeCompte, W. L. Millroy, & J. Preissle (Eds.), *The handbook of qualitative research in education* (pp. 3-52). London, UK: Academic Press.

Wolcott, H. F. (1994). *Transforming qualitative data: Description, analysis, and interpretation.* Thousand Oaks, CA: SAGE.

Yonezawa, S., Wells, A. S., & Serna, I. (2002). Choosing tracks: "Freedom of choice" in detracking schools. *American Educational Research Journal, 39,* 37-67.

Yosso, T.J. (2005). Whose culture has capital? A critical race theory discussion of community cultural wealth. *Race, Ethnicity, and Education, 8*(1), 69-91.

Zamudio, M. M., Russell, C. Rios, F. A., & Bridgeman, J. L. (2001/2011). *Critical race theory matters: Education and ideology.* New York, NY: Routledge.

Zimmerman, B.J. (2000). Self-efficacy: An essential motive to learn. *Contemporary Educational Psychology, 25*, 82-91.

APPENDICES

APPENDIX A: SCHOOL DISTRICT CORRESPONDENCES

Subject:	Research Request
From:	[redacted]
To:	alannanjohnson@yahoo.com;
Cc:	[redacted]
Date:	Tuesday, September 18, 2012 5:02 PM

Dear Ms. Johnson,

I just received an email from Dr. [redacted] regarding your request to conduct research in [redacted] County. My apologies for what appears to be some confusion. Per Board Policy if research is only taking place in one school, permission is required from the Principal, and not from the central office. It was my understanding from when we talked last spring that I had communicated that to you, but it appears that may not have been the case. I've copied Dr. Ri[redacted] this email and will follow up with a call if it is needed.

Please let me know.

Regards,

[redacted]

[redacted], Ph.D.

Executive Director for Accountability

[redacted] County Schools

[redacted] Avenue SW

[redacted]

[redacted] Office

[redacted] Cell

[redacted] Fax

APPENDIX B

Initial Interview Questions

1) Why do you think you achieved academic success in mathematics?
2) How do you feel about mathematics? Are or have you ever been intimidated by math?
3) Did you feel pressure as an African American to be a high achiever? If so, what type of pressure and how did you handle the pressure?
4) What part do your friends play in your success? Were they encouraging?
5) How would you describe your friends and the relationship you share with them?
6) Would you consider your friends, life-long friends?
7) Did you have conversations with your friends about your classes and/or your grades?
8) When and how did you meet your friends? Do they attend your school? Are they on your grade level? Are they in your classes? Have your friends achieved the same level of success in mathematics as you?
9) Have you had any negative experiences related to you being a high achiever? If so, please explain.
10) Do you participate in study groups? Are your friends a part of the study groups?
11) Is there competition among you and your friends to be high achievers? If so, would you consider it healthy competition?
12) Are there others to whom you would contribute your success? Who are they? Are these people related in any way to your group of friends?

APPENDIX C

Sample Coding

Biography
Family History
Feeder Schools
Parents
Personal History and Goals
Siblings

Dean
AP No Longer
Biography
Career Planning
Dean's Temperament
Grumbling Parents
Identifying Friends
Pacing
Personal Life
Saturday Sessions
Seating
Success Rate
Thoughts about Dean
Thoughts about Participants

Extracurricular Activities
HOSA
Robotics
Women Hillman

Friends
After High School
Best Friends
Buffering Friendships
Choosing Friends
Circles of Friends
Classroom Friends
Defining/Describing Friendship
Effect of Friendships
Friendly Competition
Friends and Success
Friendships Lost
Grades
Grade Share
Hanging Out
How We Communicate
How We Met
Lifelong
Maintaining the Friendship
Motivation
Natural Gravitation
On Par
Parental Influence
Put to the Test
Sharing Resources
Support
We All We Got

Hillman
ABC Schedule
Believing is Key
Come West Program
Covert Operation
Demographics
General Population
Partnerships
Pathways
Perception more than Reality
Soren
Biography
Superman
Vision for Hillman
The Baseline
Too Much Friends
Transition
A Jewel
Community vs. Teachers
Consistent Leadership
Dr. Irving
Dr. White
Top Scholar
Using Your Resources
Interim Principal
Irving vs. White
New APs
The Fight

Math
Calculus
2nd Semester
AP Potential
Atmosphere
Calc Grades
Failing
Options at Semester's End
Georgia Virtual
Other Students
Review
Seating
Classroom Interactions
Experiences throughout
.....Math at Hillman
Intimidated by Math
Lesser Math Courses
Math Curriculum
Math Feelings
Math History
Working Problems